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HOW TO WRITE A THESIS

BY

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OHIO STATE UNIVERSITY

Revised and Enlarged Edition

PUBLIC SCHOOL PUBLISHING COMPANY
Bloomington, Illinois.

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TO

MY GRADUATE PROFESSORS, THE MEMBERS OF THE
FACULTY OF THE SCHOOL OF EDUCATION OF THE
UNIVERSITY OF CHICAGO, 1916-19, WHO, BY PRECEPT AND EXAMPLE, STROVE TO INCULCATE IN ME A LARGER RESPECT
FOR SCHOLARSHIP

PREFACE

> Produce! Were it but the veriest infinitesimal fragment of a product, produce it in God's name.—*Carlyle*

The requirement that every candidate for a graduate degree must prepare an acceptable thesis is perhaps the most characteristic respect in which a graduate curriculum of a university differs from an undergraduate curriculum. In the work of the undergraduate curriculum the student is guided by his professors at practically every step in his work, but in the work of the graduate curriculum he is placed more and more on his own resources and responsibility; moreover, he is expected to show a high and constantly increasing degree of intellectual independence. Preparing the thesis aids in developing this intellectual independence; furthermore, the quality of the thesis which the student produces is one of the best measures of the degree of intellectual independence which the student has attained; ergo, it is one of the best indexes of whether the student is entitled to a graduate degree.

[illegible] Grad. Thesis

expectation of intellectual independence

The preparation of the thesis is calculated to give the student intensive and scholarly training in the collection, the organization, and the presentation of material. If the task accom-

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plishes the results just mentioned, it should not be looked upon as only another chore to be perfunctorily performed, nor yet as only another requirement designed to make a graduate degree more difficult to secure, but rather should be regarded as one of the most worthwhile types of training which the graduate curriculum gives. If the present author may be permitted to be personal for a moment, he would say that, valuable as the other training was, he received no training in his experience as a graduate student which he needed as much, and has used as much, as the training which came to him in writing his Master's and his Doctor's theses; he would testify further that he has talked with a legion of other persons who give similarly high rank to the thesis requirement as compared with the other requirements for graduate degrees.

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Most candidates for graduate degrees enter into the task of writing their theses with little or no idea of methods of procedure, or of standards to be met; for many students, the writing of the thesis is their first research and literary effort: what is expected of them is all mystery. The result to them is the loss of a large amount of time in writing and re-writing

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their theses. Moreover, much time and energy of the instructors, who must direct the writing of theses, are consumed in pointing out again and again shortcomings in such matters as the organization of statistical tables, the citation of authorities, the general organization of the thesis, and the arrangement of the bibliography; still more, these directions must be given to each tyro in thesis writing. There should be—in fact, there *is*—a better way of securing and of giving the directions just mentioned.

Those persons who are writing theses are in need of, and are entitled to, stimulation, guidance, and help, and it would seem that much of this assistance could be obtained through written directions and suggestions if such were available. It is the chief purpose of this book, therefore, to record some directions and suggestions, which it is hoped may be serviceable not only to those persons who are writing theses but also to those persons who are directing the writing of them. Most of the suggestions, it is thought, will be found helpful in the preparation of other scientific treatises as well as theses.

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Although the content of the thesis is not neglected in the book, the major emphasis of the book is placed on the matter which, common observation has shown, causes the student the greatest trouble, namely, the literary style of the thesis. It is believed that the book contains a fairly comprehensive, reasonably harmonious, and withal practical, set of rules and suggestions on the preparation of theses and other scientific papers.[1] Manifestly, however, the book cannot claim to cover every point, nor to utter the final word on those points which it does cover. Many matters not here included must be taken for granted, and common sense must always be used in applying to each situation as it occurs the rules and suggestions herein set forth. Rules of rhetoric and grammar have not been included, because such helps are already available in many other textbooks, handbooks, and manuals.

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The book could hardly have been prepared without the many helpful suggestions which were received from numerous sources. Some printed and mimeographed suggestions—few though they were—were gladly made available by the deans of various graduate schools and departments of universities. Many suggestions were also freely given by several professors and reference librarians of various universities. For the assistance just mentioned the author is greatly indebted. The author is particularly indebted to his former colleague, Professor B. R. Buckingham, whose sympathetic interest, incisive criticisms, and kind suggestions were an invaluable help in preparing the first edition of the book. In preparing this, the revised, edition of the book, much valuable assistance, particularly on editorial matters, was given by Miss Josephine MacLatchy, editorial assistant of the Bureau of Educational Research of Ohio State University, and the author gratefully acknowledges that help. Alfred O. Brown, of the Public School Publishing Company, gave many suggestions for the improvement of Chapter VII, and that help is hereby acknowledged. He is also indebted to his students who, through their requests for information on the methods of research and the technique of writing theses and other scientific papers, have been the inspiration for most of the suggestions. For any errors, heresies, or other shortcomings which the book may contain the author is alone responsible.

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[1] The suggestions have been written with the Master's thesis particularly in mind; they are generally applicable, however, to the Bachelor's thesis and to the Doctor's thesis.

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COLUMBUS, OHIO WARD G. REEDER

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CHAPTER I

THE NATURE OF THE THESIS

The Thesis as a Work of Science, or of Art

The thesis as a scientific document.—In all universities of the world, so far as we have been able to ascertain, a thesis is considered to be a report of a research on a given problem or topic. A thesis is, therefore, a scientific document. It is presumed that the author of the thesis stands ready to defend his work with the data which have been collected and organized; indeed, those data themselves are the best—perhaps they are the only—defense of the thesis. It is presumed also that a thesis, particularly a Doctor's thesis, will be "a contribution to existing knowledge." This contribution to existing knowledge may be made in one or both of the following ways: (1) by the derivation of a new method or technique, or by the improvement of an old method or technique; (2) by the use of an old method or technique in making a scholarly collection and organization of data on a given problem or

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topic. If it be insisted that a thesis, particularly one for the Bachelor's or for the Master's degree, cannot always be expected to be a contribution to existing knowledge, certainly in all cases it should be expected to be a *scholarly* document worthy of the degree for which it is submitted.

The thesis as a work of art.—The definition of a thesis which has just been given seems to close the door to theses, which, though they might be works of art and might make real contributions, are not scientific documents. For example, the definition apparently closes the door against the student who might create a great novel, an immortal poem, a beautiful painting, a great music-composition, an inspiring architectural design, or a famous work of sculpture, and submit such as a thesis. For universities to close the door to such contributions would be a serious mistake. Instead of closing it, the door should be left wide-open for every type of creative genius—that person in ten thousand or ten million—, and perhaps university requirements for graduate degrees should be reformulated to make it clear to every student that the "latch string is always out" to the creative genius.

In brief, our universities should encourage in every practicable way all efforts at creative work, and they should never be guilty of formulating requirements which would discourage, stifle, or kill such efforts. Who will say that the artist has made a lesser contribution to civilization than the scientist? A world constituted of all science and no art would be a cold, unfeeling, unlovely, and futile habitat; no one would care to live in that world which would be void of beauty and inspiration.

THE NATURE AND PURPOSE OF RESEARCH

What research is.—An excellent statement of the boundaries, the nature, and the purpose of research and science is found in an inaugural address of a university president; because the statement is helpfully pertinent it is quoted herewith:[1]

> There exists in the public mind much uncertainty as to the nature and purpose of research. The problem of research is the problem of searching for the truth—of searching for what is 'so,' as the man in the street would probably express it. It is not a search for those fragments of truth which have already been found and are now described in books, more or less scarce, or obscure, but a search

Research a
for truth

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[1] W. W. Campbell, "Universities and the Truth," *School and Society*, XX (September 6, 1924), pp. 294-295.

for existing truth which has not yet been found by anybody. A professor engaging in research work is looking for something that already exists. He does not invent the truth, he does not develop the truth, he does not do anything whatever to the truth except to uncover it or discover it, and expose it to the comprehension of his fellowmen. . . . .

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We must guard against a too narrow use of the words 'research' and 'science.' When a scientist is spoken of, most people have the chemist or biologist or astronomer or the modern farmer in mind. The chances are that they will leave out the student of Greek or of the history of religions; and that is frequently a mistake. A classical scholar who devotes himself seriously to the study of the evolution of the Latin language, or who searches for the forces which produced the wonderful Greek civilization, and for the other forces which later operated to destroy it, is as truly a scientist as he who studies X-rays or the decomposition of radium. If a professor of history endeavors to trace the effects of the continuous working of ethnic, economic, climatic, religious, and other forces upon the development of nations and civilizations, he is a real scientist. A scientist is one who studies any subject with due and impartial regard to the facts, and always with reference to cause and effect.

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What research is not.— There is, of course, much waste, sham, and pretense in our efforts at research. Probably only a small percentage of the research endeavors of our scholars advances human progress; but, the small per-

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centage which does advance human progress more than pays the way of the valueless research. If space permitted, and if we were not afraid of being trite, we could discuss at length the importance of research in a progressing civilization. A trenchant plea for more valuable research, together with an attack on so-called research, which in fact is *not* research, is made in a recent editorial of the *School of Education Record, of the University of North Dakota;* that statement follows:[1]

> We have heard much during the last few years of what is called 'research.' True and genuine research is one of the finest performances of human intelligence and ingenuity. But 99 percent of the so-called 'research' in both undergraduate and graduate work is far from *research:* indeed, much of it is a veritable 'idol of the theatre.' The work of some men is genuine research; but where you find one such piece of work you will find thousands and thousands of mediocre students who are kept busy collecting and collating, in small puttering ways and sometimes with the scissors, work that is passed off and palmed off in ponderous theses as research. It would remind one of Carlyle's saying that 'some people are noted for fussy littleness and an infinite deal of nothing.' Professors set students to collecting data that might be gathered by an eighth-grade pupil and call it research.

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[1] Quoted from *Educational Research Bulletin,* V (October 6, 1926), p. 302.

The result is only what is of common knowledge and in most cases it leads nowhere. As someone has aptly said of such research, 'It is trying to find out for the hundredth time what everybody knows and then expressing it in language which nobody understands.' Much of the so-called research work is absolute inflation, and the theses embodying it very soon find their place on musty and dusty shelves to be heard of no more.

One often wonders if there is not so much pretension and inflation in the whole modern educational world that there is very likely to be a 'blowout' in the near future: it would suggest the truth of Æsop's fable of the frog. Nearly every institution and every department seems to be 'playing' research in order to exploit itself in a public and advertising way: they must know that much of it is only a game.

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I know that when one strikes at one extreme he is likely to be accused of the other extreme by those who are unable to think straight, to infer sanely, and to interpret justly. It is only the sham work that I am hitting—there is nothing finer than genuine research and artistic expression and formulation.

There is now a woeful and lamentable amount of this sham work in the academic world. There is so much froth and foam and so little body, so much chaff and so little wheat, so much verbiage and so little that is new, so much 'hot air' and so few refreshing breezes, so much pretension and so little realization, so much mere propaganda, personal, departmental, and social, that it is not surprising that the keen practical man in the world of deeds looks upon it all as merely academic and visionary.

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MAIN CHARACTERISTICS OF SCIENTIFIC DOCUMENTS

If it is to be a scientific document, and most universities require that it shall be such, the thesis should bear the earmarks of such documents. Among the most characteristic of those earmarks are the following:

Accuracy.—Because of the harm which it may do in disseminating erroneous information, an investigation which is not accurate is worse than no investigation—in fact, such an investigation is unforgiveable. It is worth emphasizing that all statistical data of the thesis should be collected, organized, and reported with meticulous care. It is a good plan to check and to recheck all statistical data of the investigation until the author has complete confidence in their accuracy. An adoption of the plan just mentioned will save an author many embarrassments in having to apologize for any inaccuracies when they have been brought to light by other more careful workers. Moreover, all names, titles, and similar information should be exactly correct, because it is possible for an author to be inaccurate in matters other than the use of statistical data.

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Typists and compositors, who type or set up the manuscript, are human and they therefore have the human propensity for making errors; their work, therefore, should be carefully checked. An author is responsible for supervising and checking the work of all his agents; any errors which they make and which he does not correct, will be charged against him. An author's reputation as a scholar depends very largely on the carefulness with which his work is done. It is impossible to secure and to maintain an enviable reputation as a scholar when inaccurate work is produced. It is better not to have a reputation than to have a *bad* reputation; a bad reputation is more difficult to live down than a good reputation is to acquire.

Objectivity.—The thesis should be objective, not subjective, in its method; that is, real facts and verifiable evidence (objective data) must buttress the document, and not merely the unsupported opinion (subjective data) of the writer. Subjective statements such as "I believe that was the cause and this is the result" should usually be avoided in a thesis. For the establishment of any point, only objective data can be relied upon. If the author's opinions are given, they should either be supported with data collected in the investigation of the thesis problem, or the reader should be cited to other investigations which substantiate the opinions expressed. It is well to keep in mind that facts and evidence can solve, or help to solve, problems, but mere opinion can never solve them. However, on many topics at present,—perhaps on some topics it will always be thus—only opinion can be secured as evidence; in such instances, opinion—particularly the opinion of several qualified persons—may be used as evidence, but it should not be used as conclusive evidence; someone has aptly said that "the ignorance of many is of less value than the intelligence of a few." Most theses, particularly when first submitted for professorial criticism, have as one of their greatest shortcomings the violation of the principle of objectivity.

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Impartiality.—An author should not permit any prejudices, feelings, and preconceived notions about the thesis problem to vitiate his work on the problem. He should not start out to prove that a certain theory is the *correct* theory, but should start out to find, and be interested only and always in finding, the *truth.* Only the truth is wanted, and it should be as-

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siduously and impartially sought and recorded however much against the author's feelings, personal interests, or anything else it may be. If there are two or more sides to the question being investigated—and there frequently are—the author should be fair to all sides. The aim should be to discover and report "the truth, and nothing but the truth." St. Paul's admonition, "Prove all things, hold fast that which is good," is another way to express the aim which should always guide the scientist. This penchant for the truth is the guiding aim of all true scientists, all other aims being corollary and secondary to it.

Verification.—The investigation should be so reported that, if desired, it may be readily duplicated and verified by some other person. Therefore, the method of attack employed, the sources of data used, and other aspects of the investigation, should be carefully indicated. Frequently, those data of minor import, which, if presented in the thesis would tend to clutter it, may well be filed somewhere, say, in the university library where they would be readily available, if needed, to other investigators.

Readability.—Although it may be most excellent, research which is not read will not affect society much, if any. Every scientific document should, therefore, be written in a readable and attractive style. Moreover, the scientist owes it to society to try to make his material available to as large a group of readers as possible. When an author has ascertained the truth he has accomplished his chief task, but his task is not finished until he has made his discoveries known to his fellowmen. As the reader progresses through this book, he will observe that most of the suggestions of the book are calculated to help the student make his thesis more readable.

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SOME COMMON VIOLATIONS OF THE PRINCIPLES OF SCIENTIFIC PROCEDURE

Some common violations of the aforementioned characteristics of scientific documents are listed below; these and other violations should be carefully avoided.

The author stating his opinion as a fact without any evidence, or without sufficient evidence, to support the opinion.—Example: "I am sure that the script method of presenting words in spelling lessons is better than the print method."

A statement such as the foregoing, unless it is supported with objective evidence, is merely an opinion and, therefore, cannot be expected to establish any point. For an author to give his opinion on any matter is easy, but to justify the opinion—particularly to justify it by means of objective data—well, that is a different matter! In scientific treatises, if opinions are given, they should be stated only as opinions, not as facts.

Stating the opinion of a reputed, or so-called, authority as a fact.—Example: "Professor Smith, a noted physicist, has given his opinion that the Einstein theory is correct, therefore, the theory cannot be successfully assailed."

The foregoing statement illustrates the unfortunately common tendency to accept as truth the opinion of a reputed, or so-called, authority. Of course, the chances are large that an outstanding authority will always have evidence to support his statements; if he does not have such evidence, then his pronouncements can be accepted as opinions only, not as facts. Someone has facetiously remarked, but, likely with considerable truth, that "one man's opinion is as good as another's, probably slightly better." The theory that "the king cannot be wrong or do wrong" has no place in science.

Stating the opinion of a committee as a truth.—Example: "The committee has decided that the best work can be accomplished in high-school classes which have no more than thirty pupils."

Many people believe that the opinions of committees, particularly the opinions of those committees composed of persons of eminence, should always be accepted as truth. It should be evident, however, that even a "congress of notables," however honest and diligent in searching for the truth the members of it may be, can go astray in its search for the truth. Frequently the vote of a committee will have been arrived at through a series of compromises—compromises which have done violence to the truth.

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The function of the scientist is to discover the whole truth and to make it known to his fellowmen; the function is not to discover half truth, nor is it to compromise the truth in any regard. Two plus two equals four, and any mental juggling which would attempt to make two plus two equal three, five, or some other

Scientist
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amount can never be accepted by a true scientist. In the realm of science a thing is true or not true, the vote of a "congress of notables" to the contrary notwithstanding.

Stating the opinion of the majority as a fact.—Example: "Most people believe that consolidated schools are more pedagogical and less expensive than one-teacher schools, therefore, it has been proved that consolidated schools are better."

[illegible] opinion

The only comment needed on the foregoing statement is that the opinion of the majority does not necessarily establish truth. The opinion of the majority has frequently been proved untenable. One of the worst incubuses of progress, past and present, has been and is the wide-spread belief that the opinion of the majority settles a question. There is always unrest—and this is fortunate—until a question is *correctly* decided; there will always be a place in the world for heretics, questioners, and "doubting Thomases."

Reasoning from analogy.—Example: "It has been demonstrated that rats, guinea pigs, dogs, monkeys, and other animals learn by this method, therefore, it may be concluded that children learn by the same method."

The false logic in the foregoing statement is evident. The only sure way in which to ascertain how children learn is to experiment on *them,* not on rats, guinea pigs, dogs, monkeys, and other animals. Experimentation, with children as subjects, might prove that children learn in an entirely different manner from the animals mentioned.

Reasoning from silence.— Example: "The tale that Washington cut down his father's cherry tree has never been disproved, therefore, the tale must be accepted as fact."

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Even though a belief has not been disproved, that fact does not necessarily prove that the belief is correct. Information is sometimes apocryphal. We cannot be sure whether a belief is tenable or untenable until all the available evidence on the belief has been collected. Concerning the story of Washington and the cherry tree, it would be as logical to say that, "The tale that Washington cut down his father's cherry tree has never been proved true, therefore, the tale cannot yet be accepted as fact."

Omission of evidence contrary to a certain theory which the author supports.—Such omission of evidence may be either intentional or unintentional, but in either case, it evinces unscientific work. The scientist must take a judicial attitude, not a prejudiced attitude.

Failure to indicate how and where data were secured.—Failure to indicate how and where data were secured makes an investigation unverifiable, and, therefore, unscientific.

Insufficient data.—A thesis which has insufficient data lacks substance and makes it impossible for its author to formulate conclusions with any probability of accuracy.

Inaccurate or vague citations, quotations, dates, names, titles, etc. — Inaccurate data often cause inconvenience to the reader, cheapen the efforts of scientific workers generally, and always injure the reputation of an author who is responsible for such data.

Wrong interpretation of data.—One of the most common mistakes which untrained and careless research workers make is to state possible facts as probable facts, or worse still, to state possible facts, or probable facts, as *certain* facts. Another common mistake, which is made particularly by authors of statistical and experimental theses, is to conclude that when

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a correlation exists between two sets of data there is a *causal relation* between the data. Obviously a causal relation cannot be claimed to exist until such a relation has been proved. It must be proved which set of data, that is, which factor, is cause and which is effect; until that is done, it cannot be known whether a correlation is causal or merely coincidental.

REVIEW QUESTIONS[1]

1. What is a thesis? Do you think that an artistic work such as a music-composition, a novel, a painting, or a work of sculpture should be accepted as a thesis? Why or why not? For the typical student, would it be as easy to prepare, and to secure approval of, a thesis which is a work of art as one that is a scientific document? Why? Which type of thesis would be easier for the student's professors to appraise? Why?

2. Many university catalogues say that "the thesis shall make a contribution to existing knowledge"; this statement is almost universally applied to the Doctor's thesis, and less frequently to the Master's thesis. What does it mean to make a "contribution to existing knowledge"? Could a work of art, such as a painting or a music-composition, make a contribution to existing knowledge? Explain.

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[1] It will probably be helpful to the student, after he has read a given chapter of the book, to answer the questions at the close of that chapter. A few questions, which are designed to help the student review the more important points of the chapter, are found at the close of each chapter.

3. What are the purposes of the thesis requirement? Under what conditions, if any, do you think that the thesis requirement should be waived? Explain. Under what conditions, if any, may the thesis requirement be waived in your university?

4. What are the outstanding characteristics which a scientific document, such as a thesis, should possess? Explain each characteristic and justify its inclusion in your list.

5. Mention several examples of common violations of the principles of scientific procedure which you have seen in scientific documents.

CHAPTER II

THE SELECTION, DELIMITATION, AND PLANNING OF THE PROBLEM

SELECTING THE PROBLEM

Responsibility for selecting the problem.—The responsibility for selecting the thesis problem should be on the student, not on his instructors. The selecting of the problem and the planning of the attack upon it are as important in the training of the student as is the solving of the problem; in fact, a problem has been largely solved when the correct method of attacking it has been determined. An excellent index of the ability of the student to do graduate work is the extent to which he is able to see and to discover problems in his major field. The foregoing recommendation is not meant to imply that problems should not be called to the attention of students—quite the contrary is meant. Consultations with instructors on practicable thesis problems are always desirable, but, in order that the student may receive full benefit from the prepa-

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ration of the thesis, it should be expected that he do the actual selecting of the problem.

Just yesterday the way in which a thesis problem should be selected was exemplified by one of the graduate students of the author. That student came to the office and asked whether he might talk about a thesis problem. He was invited to proceed with his talking. One of the most refreshing characteristics of that conference was that the student had "something to talk about": he had in mind three or four live problems on which he might write a thesis. We took time to discuss each problem pro and con, and to weigh each problem against the others, with the result that it was not long until the student had tentatively selected the problem which seemed the best. Such a student is the pride of an instructor; he gives evidence that he knows where he is going and that he will arrive at his destination without much wasted time and energy.

Now contrast the student just mentioned with a second type of graduate student who comes to a professor's office and announces, or admits, that he can't think of a suitable thesis problem, and requests the professor to assign him a problem. When such a student appears, and he does appear quite often, a professor is usually in doubt whether the student has the ability and the ambition to write an acceptable thesis; it is not always true, but usually such a student is incompetent, or lazy, and sometimes he is both incompetent and lazy; he would be happy to have his professors do his thinking for him.

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Making a written record of live problems.— In order that live problems may not be forgotten, it is a good plan for the student to make a written record of all such problems as they come to mind in the course of classroom lectures and discussion, or through reading, or by other means. The present author has followed for several years the practice of writing on a filing card a statement of each particularly live and unsolved problem in his field which occurs to him; he finds that list of problems to be particularly helpful in guiding both his personal research work and that of his students. Unless an appropriate plan for making a written record of them is followed, problems come to mind, then flit away frequently never to return; an idea is an elusive thing, and for permanence it must be placed in writing.

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When to select the problem.—The problem should be selected and work begun on it as early in the student's graduate course as possible—during the first weeks, if at all possible. An early selection of the problem will give the student more time to mature his thought on the problem, and the result will be a better thesis. A hastily produced thesis is almost always poor, and, if poor, it is everlastingly to the discredit of both the student who produces it and the university which accepts it. It should not be forgotten that a thesis once written and accepted cannot be recalled and rewritten; on the contrary, it must remain as a monument, good or bad, to the student and the university.

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Criteria for selecting the problem.—Much thought will be necessary on the part of the student if a suitable problem is to be selected, and still more thought will be necessary if the *most suitable* problem is to be chosen. The best type of student will have in mind several problems which he might pursue, and his task, therefore, will not be that primarily of securing *a* problem, but rather it will be that of selecting *the* problem. In this fortunate dilemma the student must carefully weigh each problem against every other problem, and under the guidance of his major professor he must select the problem which seems best. When selecting the problem the following criteria, among others, should be kept in mind:

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The novelty of the problem.—That is, how much work, if any, has already been done on the general problem and will further work on it be helpful? Before plunging into a problem, the student should make sure that he is not duplicating, unawares at least, the work of someone, particularly the work of someone who has made a scholarly investigation of the problem; moreover, an attempt should be made to ascertain whether any other person is now working on the proposed problem. The time of scientific workers is too valuable to spend in working on problems which have already been sufficiently investigated, or are now being investigated, by other workers. However, such considerations as the discovery of new methods and techniques, which methods and techniques were not extant at the time of making a given investigation, might make it advisable to duplicate in part an earlier investigation for verification or for further discoveries.

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The student's interest in the problem.—It goes without saying that a problem should be selected in which the student already has interest, or in which he can soon create an interest. It is curiously true that work on almost any problem soon becomes interesting, and grows increasingly interesting, to the true research scholar. Someone has aptly said that "there are no uninteresting subjects; there are only uninterested persons."

The practical value of research on the problem to the student and to other persons.—Other matters being equal, an attempt should be made to select a problem whose solution will be of the greatest practical value to the student and to other persons as well. No research—scholarly and real research is meant, of course,—lacks practical value; but some research has more practical value than other.

The student's special qualifications to attack the problem.—That is, does the student have the special qualifications requisite for an effective attack upon the proposed problem, or would he do better to select another problem on which his special qualifications could show to better advantage? It should be noted that the attack on some problems requires large ability in statistical method; on others, unusual power of description is needed; on others, large knowledge of experimental procedure is demanded; on others, thorough familiarity with the historical method is needed; and on still others, other special abilities are required.

The availability of data on the problem.—That is, are data which bear on the problem available and reasonably accessible? It should be noted that data on some problems are difficult, if not impossible, to secure. If at all possible the use of a questionnaire in securing data should be avoided.

(time & money)

The cost of investigating the problem.—To secure data on many problems requires an expenditure of money as well as of time; in fact, some problems require a large expenditure of money—money for reference books, experimental apparatus, postage, clerical service, or other materials and services. All of such expense must usually be borne by the student. Thus, can be seen the importance of the student carefully estimating the cost of completing a proposed problem, and of weigh-ing the cost against his financial resources and against the value of the problem.

The time which the investigation of the problem will probably require.—The time which will probably be required to complete the problem is, of course, a minor consideration in selecting a problem; the practical value of the problem, the student's interest in the problem, and similar considerations, are of vastly greater importance than time. Time, however, should be kept in mind when the problem is being selected, for after a problem has been undertaken it must be completed in the most scholarly manner whatever the amount of time required.

DELIMITING THE PROBLEM

Importance of delimiting.—Since well-defined limits of the problem are necessary for the effective collection, organization, evaluation, and interpretation of data on a problem, it is usually advisable, after the general problem has been decided upon, to delimit it. A delimitation of the problem implies, among other things, an accurate and clear statement of the problem. Thus, not "The Teaching of Spelling" as a statement of a thesis problem, but, "The Script versus the Print Method of Presenting Words in Spelling." The latter statement of a problem in the pedagogy of spelling would be definite, and, if followed, would prevent the common mistake of taking in too much territory; moreover, it would prevent "fluttering in all directions and flying in none."

Thesis statem
should descri
a problem or

Proper amount of delimitation.—An investigation should arrive somewhere, should establish some point or points, and this usually cannot be accomplished unless the general problem is delimited. A problem sufficiently limited in scope for the student to attack it exhaustively should be selected. A thesis is not an essay, and the effusiveness of the typical essay should be avoided in preparing it. On the contrary, the less common mistake of defining the problem so narrowly that it is hopelessly isolated from every other topic should be avoided. The broader implications of problems selected for research must be kept in mind by the student if he is to do practical and interesting work and if he is to avoid being merely a research drudge. Not to keep in mind the broader implications of problems and the relations of the problems to other fields of knowledge would be as absurd as would be the play, *Hamlet,* with Hamlet as the only character on the stage.

PLANNING THE ATTACK ON THE PROBLEM

Importance of planning.—All details of attacking the problem, from its beginning to its completion, should be carefully planned before work is begun on the problem. Unless this planning is carried out, disappointments in such matters as securing data and choice of methods will be frequent. Failure to do this preliminary planning will likely necessitate that either the whole investigation or a large part of it be repeated, and that would mean a waste of time, labor, and frequently, unnecessary expense.

Admitting that the trial and error method is the only method which can be used on many problems—particularly experimental problems—, nevertheless, careful planning will reduce to a minimum the necessity for relying on that method. A definite and complete outline of the problem should be prepared before work is begun on the problem; such outline may then be revised in pursuing the problem as necessity demands. An outline will aid in securing proportion, in avoiding superfluity, and in preventing wandering. All the eminent scientists plan their work with great care; if eminent scientists thus plan their work, how much more necessary it is for the novice to plan his work with great care.

A general outline of the thesis.—The following is a general outline which may be adapted to the needs of most research problems. Such an outline should be worked out in detail to meet the special needs of the particular problem which is being investigated.

Title.—A title which consists of as few words as possible—yet words that indicate as accurately and comprehensively as possible the contents of the manuscript—should be selected. The title should be designed to attract the attention of prospective readers, but it should not be misleading to prospective readers.

Concise
Accurately
Comprehen
title

Introduction.—The introduction should not be disproportionately long, nor should any part of it, as is often the case, be prolix. The introduction might well include the following: (1) a statement of the problem and an exact delimitation of it; also a mention of the importance of the problem; (2) a statement of any work which has already been done on the

Intro
includes:

problem or on closely related problems by other investigators; and (3) a description of the data and the methods which are used in the investigation; if it is thought best, a brief statement of the data and the methods may be made in the introduction, then a more detailed description of them may be made as needed in later sections of the manuscript.

Data and results.—The presentation of the data and the results will, of course, require the major portion of the manuscript; in that part of the manuscript the following matters should be presented: (1) a detailed organization of the data of the investigation and a mention of how the data were secured; and, (2) an interpretation of the data.

[illegible]

Summary.—The summary should show succinctly the more important findings, and should state the conclusions, of the investigation. For a more detailed statement of what a summary should contain, the reader is referred to pages 87 and 88 of this book.

"Browsing" through some good theses.—To discover how the authors of those theses outlined and attacked their problems, it will be helpful for the student to "browse" through some of the better theses which have been prepared, and which will probably be on file in the university library. The student's instructors will be glad to suggest some of these better theses.

In this examination of theses, the student should not secure the notion, as some students tend to do, that the aim is to prepare a thesis as good only as the typical one, for the typical thesis—even the best one, for that matter—may be of such poor quality that a particularly able student would not care to admit having written it. The aim should be to prepare a thesis which excels even the best in both content and form; the aim should not be merely to "get by." Only by the student keeping in mind the ideal just mentioned can increasingly eminent scholarship result.

Goal to excel

TYPES OF THESES

A categorical classification of theses cannot be made, because few theses are wholly of one type. In fact, most theses, although they may use primarily the technique of one method of research, nevertheless use to some extent all or most of the various methods of research. It should be mentioned, however, that the "unity of spirit" of a thesis may oftentimes be injured by the use in it of too many different methods of research. Most theses are primarily, if not wholly, of one of the three following types:

Experimental.—In the experimental type of thesis, an experiment is performed according to correct experimental procedure to ascertain the effect or effects of a given factor or factors on another factor or factors. Examples: "The Effect of Different Types of Soil on Growing Corn;" "The Relation Between the Physical Condition of Children and Their Ability to Learn."

Historical.—An historical thesis uses the historical method of research and traces for a given period of time the development of a given situation or situations. Examples: "A History of the Democratic Party in the United States from 1828 to 1920;" "The Evolution of the Office of County Superintendent of Schools in the United States from 1835 to 1929."

Descriptive.—In the descriptive type of thesis, an attempt is made to describe a present situation in such a way that it will be entirely intelligible. Examples: "Distribution of Income in the United States in 1929;" "The Legal Status of the Business Manager of Schools in the United States in 1929."

REVIEW QUESTIONS

1. Should the student, or the student's professors, select the problem for the thesis? Why?

2. What advantages would there be in the student making, as they come to mind, a written record of live and possible problems?

3. When should the problem be selected? Why?

4. Mention and discuss briefly the more important criteria which the student should keep in mind in selecting a problem?

5. What is meant by the delimitation of a problem? Why is this delimitation necessary in most problems? Can a problem be delimited too much? Explain.

6. Why should the problem be planned from beginning to end before work is begun on it?

7. What general criteria should the title of the thesis meet? What should the introductory section or chapter of the thesis contain?

CHAPTER III

MAKING A BIBLIOGRAPHY

THE WORKING BIBLIOGRAPHY

Purposes of the working bibliography.—One of the first steps which the student should take after the problem for the thesis has been selected, or tentatively selected, is to investigate the literature in the general field of the problem in order to ascertain what, if anything, has already been done on the problem or on closely related problems. In the first place, this survey of the literature should be made because it may be the means of suggesting such things as ① subordinate problems which might be attacked, ② sources of data, ③ methods of work, and ④ possible mistakes to be avoided; in the second place, ⑤ the survey should be made in order to ascertain whether the problem has already been solved by another person, thus making it perhaps inadvisable for another worker to cover the same field. It is a good plan to summarize briefly at some appropriate place in the thesis (usually at the beginning) any work which other persons have done on the problem, or on closely related problems.

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help with
5 aspects

clude in
of Thesis

How to find references.—Every reference which shows a possibility of containing pertinent and helpful material should be examined. Those references which are found to be helpful in furthering the investigation should be perused, and listed in the bibliography, and those which are not helpful should be discarded. The care with which a reference should be examined or read will depend, of course, on the prospective relevancy and the probable helpfulness of the reference. A mere turning of the pages of some references will be sufficient to show that the references are not pertinent to the study at hand, and should, therefore, be discarded. A casual survey of many other references, on the other hand, will show that the references are of such pertinence and helpfulness that every word of them should be read.

① Examine
references
probable

② Peruse
references
include in
bibliography
Discard the
that are
helpful

General
approach
for examin
references

The sources which should be examined in making the working bibliography will vary with the problem, but the following general suggestions regarding the sources that should be examined will be found to be worth keeping in mind:

1. Ask your professors, librarians, and other persons who are familiar with the field,

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good referen

to mention helpful references and to suggest leads. Follow all leads which have any likelihood of being fruitful; remember that the finding of one reference will often be the means of discovering other references.

mine books,
—monographs,
lished &
unpublished theses
these bibliographies

specialized books

2. Examine books, monographs, bulletins, published and unpublished theses, and other materials which deal with the same general problem or with related problems. Examine in particular any bibliographies which the works just mentioned may contain; do not, however, permit any such bibliographies to become a "crutch" to your further efforts.

3. Consult the *card catalog* of the library. If your education on the use of library indexes and library catalogs has been neglected, the librarian will be glad to show you how to use these tools. Don't hesitate to call upon the librarian for any help which you may need in running down references; one of the chief functions of the librarian is to help the student.

4. Consult the standard periodical-indexes, such as (1) *Readers' Guide to Periodical Literature,* (2) *Poole's Index to Periodical Literature,* and (3) *International Index to Periodicals.*

5. Consult the standard book-catalogs, such

as (1) The American Library Association's *Index to General Literature,* (2) *The United States Catalog,* and (3) *Cumulative Book Index.*

6. Note that many subjects have their own indexes, and the more pertinent of these indexes should be consulted. Some of the better known of the subject indexes are the following: (1) *Agricultural Index,* (2) *Architectural Index,* (3) *Dramatic Index,* (4) *Engineering Index,* (5) *Index Medicus,* (6) *Industrial Arts Index,* (7) *Psychological Index,* (8) *United States Document Catalog and Subject Index,* and (9) *The Education Index.* For a complete and classified list of such indexes the student should consult I. G. Mudge's *Guide to Reference Books* (Fifth Edition); this book contains a list of all the references listed above and hundreds of additional references.

7. Consult the indexes of periodicals in the general field of the problem. Most of the better magazines follow the practice of indexing the various authors and subjects annually, and a few of them publish cumulative indexes every few years.

Placing references on filing cards.—It is an excellent plan to list the references of the working bibliography on filing cards, using a separate card for each reference. The use of that plan will permit the arranging of the cards to allow in the final bibliography an alphabetical organization of the references, or any other type of organization which may be desired. Filing cards of 3 by 5 inches are usually a good size to use; if, however, the student desires to take elaborate notes on any or all references, cards of 4 by 6 inches or of 5 by 8 inches are more appropriate. Fig. 1 illustrates a filing card on which have been entered the bibliographical data for a reference.

LB 5
R 96
V. 141

Ayres, L. P. *An Index Number for State School Systems.* New York: Department of Education, Russell Sage Foundation, 1920. 70 pp.

A statistical study which ranks the several states and territories of the Union on the efficiency of their school systems.

FIG. 1. A SAMPLE CARD IN A WORKING BIBLIOGRAPHY

Library call-number.—The library call-number of the reference should be entered in, say the upper left-hand corner of the filing card (see the sample in Fig. 1). The entering of the call-number is recommended, because, if there is need to refer again to the reference, time will be saved in securing the reference from the library. The library call-number should appear only in the working bibliography, not in the final bibliography.

An annotation of each reference.—If, upon examination of the reference, it is found pertinent to the study, it will be helpful for the future use of the reference to enter on the filing card a brief annotation indicating the general contents and the merits of the reference. For a sample annotation, see Fig. 1.

Make a
dissertation
reference d
give each ref
a brief anno

Main criteria for bibliographical data.—There are three main criteria which the bibliographical data of references should meet—namely, (1) *accuracy,* (2) *completeness,* and (3) *consistency.* If these criteria are kept in mind when the working bibliography is made, not only will the working bibliography be more useful to the student, but the final bibliography, which must be prepared from the working bibliography, will be much more valuable to other persons who may have occasion to use it.

Accuracy of data.—The first criterion which the working bibliography should meet is meticulous *accuracy*. An inaccurate working bibliography should be guarded against because such a bibliography would be likely to cause not only the student trouble in attempting to use it at a later time, but would be sure to inconvenience and irritate persons who might try to use the bibliography when it appeared in final form. Who has not had the experience of trying to find a certain reference, but was handicapped—perhaps entirely thwarted in the attempt—because of the "bum steers" of an ignorant or careless author who prepared the bibliography! When copying the bibliographical data for a given reference the author should make sure that the data are copied exactly as they appear in the reference; this means that every necessary word, figure, or symbol shall be included and that the spelling of every word shall be perfect.

Completeness of data.—A second criterion which the working bibliography should meet is *completeness* of needed data. A bibliography which does not include all the data which are necessary in readily finding each reference is just as much of a handicap to a person who might desire to use the bibliography as inaccurate data would be. A bibliography is made *to use,* not to serve as "ornamentation."

In order to save the time which would be required to secure the data later—when perhaps the demand for the data has been made by a critical professor or an insistent editor—all bibliographical data which are required for each reference should be secured when the reference is first examined. The importance of securing complete bibliographical data on each reference becomes more evident when it is realized that in the case of a large bibliography dozens of hours might be required to secure only one missing bibliographical item, say the date of publication, for each reference.

Be thorough
your bibliog
critical prof
will check

Consistency in style.—A third criterion which the working bibliography should meet is *consistency* in style. There should be consistency in the kind of bibliographical data to be included for similar references, the order of entry of the data for similar references, and the punctuation for similar references. When a writer does not keep these matters in mind he gives evidence of ignorance of them or of carelessness; while both of these shortcomings are unfortunate, neither of them is excusable.

There are several standard bibliographical styles in use and it does not matter much which of these standard forms is used so long as a particular form is adopted in the beginning and is used consistently throughout the bibliography; *the style is important, but consistency in the use of the particular style adopted is of greater importance.* If the student contemplates the publication of his thesis, he should follow the style of his prospective publisher. The bibliographical samples in this book follow closely *A Manual of Style* (Ninth Edition), of the University of Chicago Press. The book just mentioned is one of the most widely used style books and every person who does much writing, or aspires to learn to write, should have a copy of it, or of another standard style book, on his desk for reference.

Bibliographical data to secure.—Since books and magazines are the types of references which are most frequently used in writing theses, special suggestions will be given herewith regarding the bibliographical data which are needed for them. The bibliographical data which should be secured for such references, and a suggestive order of entry for the data, are as follows:

(Data for Books)

1. *Author's name.*—Write the author's last name first. Do not make a mistake in spelling the name or in copying the initials. Copy the name just as the author uses it on the title page of the book; if he uses his initial, or initials, copy it that way; if he writes his Christian name in full, copy it that way. Of course, if the author's name is not given, it cannot be indicated in the bibliography. If the book has more than one author, and as many as, say three authors, the names of all the authors should be included; if the book has more than three authors it is permissible to include only the name of the first author and to follow that with the words, "et al," or the words, "and Others." The author's position and his degrees, which sometimes appear after the author's name on the title page of the book, are not included in the bibliographical data.

3+ author

Don't incl
degree titl

2. *Title of the book.*—Copy the complete title, and do it accurately. Copy the title from the title page of the book, not from the cover

Copy title
title page,
cover

of the book; the title on the cover of the book is not always the complete title. The title of the book should be underscored with one straight line to indicate italics. When a book has a subtitle this should be retained and treated as a part of the title.

3. Place of publication.—Most of the large publishing companies have several branch offices and the location of all of these, as a rule, are printed on the title page of the book; usually the office first mentioned is the editorial and publishing office, and it only should be indicated in the bibliography as the place of publication. If the city of publication is large, for example, if it has more than two million population, it will not be necessary to give the state of publication, but only the *city;* if the city of publication is small, it is a good plan to include both the city and the state. However, if the place of publication is a foreign country, the name of both the city and the country of publication should always be included.

4. Name of the publisher.—As for all other items, copy the name of the publisher in full and exactly as it appears in the book.

5. Date of publication.—This, too, must be accurate. If the book which is being used is a revised edition, give the date of the revised edition only.

Date of pub. revised edn

6. *Pages.*—Indicate only the pages which are pertinent to the study being pursued. If all of the book is pertinent, include all of the pages of the book; do not fail to include the prefatory pages, which are usually numbered in Roman, provided the whole book is pertinent. Use "p." as the abbreviation for one page and "pp." as the abbreviation for more than one page.

p. – One p
pp. – 2+ pgs

(Data for Magazines)

1. *Author's name.*—Follow the suggestions given above for books. Many articles omit the author's name and when that is the case this item cannot be included.

2. *Title of the reference.*—Copy the complete title accurately. The title should be inclosed in quotation marks.

3. *Name of the magazine.*—Copy the name in full; do not abbreviate. Underscore the name with one straight line to indicate italics.

4. *Number of the volume.*—Be accurate. Use Roman numerals for the number of the volume.

5. *Date of publication.*—Give month, date of month (if date of month is indicated), and the year; set these data in parentheses.

6. *Number of pages inclusive on which the article appears.*—Use "p." as the abbreviation for one page, and "pp." as the abbreviation for more than one page.

Sample bibliographical entries.—The following are sample bibliographical entries for various types of references. The attention of the reader is directed particularly to the data given for each reference, the order of entry of the data, and the punctuation of the data.

(Books)

A Manual of Style. 8th ed. Chicago: The University of Chicago Press, 1925. ix + 298 pp.

Clapp, Frank L., Chase, Wayland L., and Merriman, Curtis. *Introduction to Education.* Boston: Ginn and Company, 1929. xix + 569 pp.

Cubberley, Ellwood P. *State School Administration,* pp. 20-25. Boston: Houghton Mifflin Company, 1927.

Johnston, Alexander. *American Political History,* 1763-1876, p. 4. Edited and Supplemented by J. A. Woodburn. New York: Putman, 1905.

Münsterberg, Hugo. *Grundzüge der Psychologie,* pp. 1-16. Leipzig, Germany: Johann Ambrosius Barth, 1918.

(Magazine Articles)

"Criticism of Education." *School Executives Magazine,* XXXXIX (September, 1929), pp. 20-21.

Gates, Arthur I., and Brown, Helen. "Experimental Comparisons of Print-Script and Cursive Writing." *Journal of Educational Research,* XX (June, 1929), p. 3.

(Bulletins)

Engelhardt, Fred, and Melby, Ernest O. *The Supervisory Organization and the Instructional Program, Albert Lea, Minnesota.* Bulletin of University of Minnesota, Vol. XXXI, No. 51. Minneapolis, Minnesota: University of Minnesota, August 25, 1928. ix + 72 pp.

Statistics of Universities, Colleges and Professional Schools, 1919-1920, pp. 14-20. Bureau of Education Bulletin No. 28, 1922. Washington: Government Printing Office.

Annual Report of the Secretary of the Treasury on the State of Finances, for the Fiscal Year Ended June 30, 1923. Washington: Government Printing Office, 1924. xxii + 987 pp.

(Monographs)

Buswell, Guy Thomas. *Fundamental Reading Habits: A Study of Their Development,* p. 56. Supplementary Educational Monographs, No. 21. Chicago: Department of Education, University of Chicago, 1922.

Taylor, R. B. *Principles of School-Supply Management,* pp. 43-56. Teachers College Contributions to Education, No. 228. New York: Teachers College, Columbia University, 1926.

(Legal Material)

Laws and Statutes of California, 1881, Sec. 1793.

School Laws of the State of Ohio, With Citations and Blank Forms, Edition of 1928, p. 167. Columbus, Ohio: State Director of Education, 1928.

(Unpublished Material)

Barnhill, Otis John. "Comparison of Requirements of American Universities for the Master's Degree." Unpublished Master's thesis, Ohio State University, 1928. 91 pp.

Bell, A. H. "The Work-Study-Play Program of Gary, Indiana, and Its Cost." (Mimeographed). An address before the National Association of Public School Business Officials, Columbus, Ohio, May 21-24, 1929. Gary, Indiana: A. H. Bell, Auditor, Board of Education. 23 pp.

The Final Bibliography

Where to place the final bibliography.—At an appropriate place the completed thesis should have a bibliography which contains a list of the references that the writer has found bearing upon the thesis problem. Of course, if no references pertinent to the study have been found, there cannot be a bibliography. The usual custom is to place all of the bibliography at the close of the thesis, although in some types of theses the bibliography may be divided up and placed after the appropriate chapters of the thesis, as is the custom in books.

Purposes of the final bibliography.—In addition to being a justification of the author's work the final bibliography is designed to aid other persons, who may be interested in the problem, to secure material on it with a minimum expenditure of time and effort. Therefore, the author should not be afraid of appearing pedantic by supplying in full and with meticulous accuracy all the necessary bibliographical data for each reference.

Which references to include.—Deciding upon which references to include in the final bibliography is often perplexing. The following suggestions are, therefore, made regarding the references which should be included:

1. Rather than to have a so-called *complete* bibliography it is usually best to have a *selected* bibliography. A selected bibliography, particularly in the case of subjects which have a large number of references, would be much more useful to future students than would be a complete bibliography which might include a

For fields w
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references, s
selected bibl

heterogeneous collection of dozens of good, bad, and mediocre references.

2. All references that are quoted from, or referred to, in the text, and all which are referred to in the footnotes, should be included.

3. Only those references which have been examined by the author, and are known by him to be pertinent to the study, should be included; to include any which he has not examined, and found pertinent, comes close to being a species of intellectual dishonesty.

Organization of the references.—In order that their use may be facilitated, the references entered in the final bibliography should be classified and grouped as much as possible; for example, all references to books may be listed in one group; all references to periodicals, in another group; and all references to bulletins, in still another group. The number and kinds of groups will depend, of course, upon the problem being investigated and the kinds of references used.

nize bibliography
ences by

Within each group the references should be listed according to a plan which will best serve the convenience of the person who may have occasion to use the bibliography. For most references an *alphabetical* listing, by authors' last names, will be the most appropriate.

If citations to references are made in the body of the text, according to Plan 2, which is described on pages 110 to 111 of this book, the references should be numbered serially according to an alphabetical arrangement, or according to any other arrangement which has been agreed upon.

An annotated bibliography.—As has already been stated, an annotated bibliography is one which has comments after each reference telling succinctly the contents and the merits of the reference. Obviously an annotated bibliography is much more valuable than one which is not annotated, and such a bibliography is, therefore, always recommended. It will be observed that the sample bibliography, on pages 201 to 208 of this book, is annotated.

Annotated bibliography

REVIEW QUESTIONS

1. Why should the student prepare a working bibliography for his problem? When should this bibliography be made? Why make it then?

2. How should the student proceed to make a working bibliography on a given problem? What sources should he examine in his attempt to find pertinent references?

3. What advantages are there in listing each reference on a separate filing card?

4. What data on each reference should be secured? According to what form should these data be entered? Discuss the importance of accuracy, completeness, and consistency in making a bibliography.

5. What is an annotation? What are the advantages of annotated references? What standards should an annotation meet?

6. What are the purposes of the final bibliography?

7. Where should the final bibliography appear in the thesis?

8. Discuss the relative merits of *selected* bibliographies and of *complete* bibliographies. What criteria should the student keep in mind in deciding whether or not to include a given reference in the final bibliography?

9. What bibliographical data should be given for each book included in the final bibliography? For each magazine article? For each bulletin? For each statute? For each unpublished work? What standards should be kept in mind in entering the bibliographical data for each reference?

10. How should the references be organized in the final bibliography?

CHAPTER IV

THE COLLECTION OF DATA

The data for the thesis may be collected either through *personal investigation* or by means of a *questionnaire*. The use of these two methods is discussed in this chapter.

Personal-Investigation Method

Definition.—By the personal-investigation method of collecting data is meant the use of such means as personal correspondence, personal interviews, the first-hand examination of sources pertinent to the problem, or the organization and performance of an experiment or experiments.

Advantages of this method.—Whenever possible, the data for the thesis—for every investigation, for that matter—should be collected through personal investigation rather than by means of a questionnaire. The personal-investigation method should be used because, in the first place, it will usually procure more accurate data and hence will result in a better thesis, and, in the second place, it will save the time of busy persons in having to fill out a questionnaire; no one relishes the task of having to fill out a questionnaire.

Too often the neophyte research worker does not know about the "mines of information" which are available in his field of study, and which no one has yet worked; still more too often, he does not take the trouble to "prospect for" those "mines." Too frequently he is not aware that his field of study possesses hundreds of published documents such as books, legal documents, and state or federal reports which contain valuable data that he might use in writing a thesis; moreover, he is frequently unaware of many unpublished data, such as may be found in local, county, state, and federal public offices, and which would gladly be made available to him upon his request. In spite of the fact that our most eminent studies have been made either by the use of the sources which have been mentioned above, or through the performance of experiments, a large percentage of our students still persist in pursuing the "get-rich-quick" plan of research—the use of the questionnaire. We are making a plea, therefore, for a larger use of the personal-investigation method in research, and the use of that method will require students of greater ability, more imagination, and larger energy.

Kinds of sources of data.—There are two kinds of sources of data—(1) *primary* or *original,* and (2) *secondary. Secondary* sources are those which have secured their data from other sources, and those "other" sources may be either primary or secondary. *Primary* or *original* sources are those which secure their data at the origin of the data.

Of course, it is possible for sources to vary much in their degree of primacy or originality. For example, a first-hand and authoritative investigation of the population of a city would give the most primary or original data on the population of the city; a published report of the United States Bureau of the Census on the population of the city would furnish data which would be slightly less primary or original; and a work which quoted a publication of the United States Bureau of the Census on the population of the city would provide data which would be still less primary or original—so much more so that such a source would probably be called secondary.

In collecting and using data, chief reliance

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should be placed on *primary* or *original* sources rather than on *secondary* sources. For example, to secure needed information on a certain statute of a given state it would be better for the student to look up the statute in a copy of the state laws (which is a primary or original source) than to risk a report of some other person on the statute; or, as another example, to secure certain statistics it would be better to go to the primary or original sources than to take the statistics from the secondary sources. It is recommended that primary or original sources be used whenever possible for the reason that when an author uses such sources he does not risk the inaccuracies which are always possible in secondary sources—inaccuracies of another author in preparing his copy, inaccuracies of the typist who typed the manuscript for that author, or inaccuracies of the compositor who set the manuscript in type. For an author to be sure of the accuracy of his own data is difficult, but for him to be sure of the accuracy of the data of other authors is even more difficult—in fact, it is almost impossible. One criterion, then, by which the merit of an investigation should be judged is the extent to which the author of the investigation used primary or original sources instead of secondary sources.

The preference which has just been indicated for primary sources should not be interpreted to mean that secondary sources should never be used—quite the contrary is meant. In spite of the limitations of secondary sources there are many instances when such sources will have to be used; for example, when they give every appearance of being accurate, they may be used occasionally in subordinate topics; or when the original data are not practicably available to the author, he will be permitted to use secondary data. Let it not be forgotten, though, that the foundation and the framework of a thesis should be composed in the main of primary or original data.

When an author takes data from a secondary source, without examining the primary source on which the secondary source is based, the footnote citation should be to the *secondary* source rather than to the primary source. For example, in the present author's book entitled *The Fundamentals of Public School Administration* the author desired to quote a portion of the Massachusetts school law of 1654; he found that portion of the law in a secondary source, namely, E. P. Cubberley's *Public School Administration.* Cubberley had apparently extracted the law from a copy of the Massachusetts statutes, but that source was not available to the present author. The present author, therefore, copied the quotation from Cubberley, and stated in the footnote that the quotation was from Cubberley; it would have been dishonest for him to have given the impression in the footnote citation that he had examined the primary source, when, as a matter of fact, he had not examined it. The footnote which the author's book carries after the quotation in question is reproduced at the bottom of this page.[1]

QUESTIONNAIRE METHOD

Wide-spread use of questionnaires.—During recent years the wide-spread use of questionnaires, and particularly the use of such instruments on trite or worthless problems, or on problems which might have been attacked by the personal-investigation method, has brought the questionnaire method of collecting data somewhat into disrepute. There has been a veritable flood of too often unnecessary, and too frequently poorly designed, questionnaires. The result has been a large amount of criticism of the questionnaire method. In fact, lest the land be "inundated" with questionnaires many persons have deemed it expedient to establish definite defenses against these instruments; thus, there has been much talking and writing against them. In brief, questionnaires have almost become a public issue. Numerous editorials have been written in opposition to them, and, with permission, we are reproducing herewith two of the most outspoken of these editorials—one of which appeared in one of our largest magazines, and the other in one of our largest newspapers; here are the editorials:

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[1] The quotation is from E. P. Cubberley's *Public School Administration,* p. 73.

QUESTION PESTS

From a young man in Indiana with a thesis to write and a bachelor's degree on the horizon, comes a questionnaire on numerous intimacies and details of *The Tribune's* business. It is a polite paper and the author would appreciate comment and statistics that would take several hard-working newspaper men, from the publisher to the auditor's clerk, several hours of careful attention. From other young men, and many not so young, come other questionnaires and query programs. They pile up on the desks of administrators, executives, business men and workers, and the million marchers toward degrees—A.B., A.M., Ph.D., et cetera, et cetera—wait hopefully and sometimes get replies.

Over the nine-hole course of learning, America advances. Up hill and down, to high school, to college, to the freshman year, to sophomore, junior, senior, bachelor, master, doctor, and to even greater altitudes of standardized glory the learners go in regular procedure, and the questionnaire is carried on in some form over them all. It is a club for middle distance. It is a solemn instrument and a tool for ordinary minds that gets a few results, perhaps of more or less importance. It standardizes certain kinds of data, but its faults are great, and its value in constructive research usually is doubtful.

The questionnaire is a kind of 'get-rich-quick' research plan that often throws upon a scattered group the burden of a job that should be done directly by the scholar or assistants under his control. Sometimes it is justified, but more often it is but a broadcast interview and the answers may mean many things. Too often the questionnaire is the refuge of helpless and amateur scholarship that has no other resource.

Pests appear in modern times with singular persistence, and the questionnaire ranks high among the major pests to-day. Advancement brings its penalties, and with new learning and invention come their correlated pests. Though no one denies that the works and businesses of this day should be studied carefully with all the facts collected, executives and business men in general will sign up en masse in the anti-questionnaire society.[1]

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[1] *Chicago Tribune,* Part I, p. 6, December 9, 1928.

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surveys,
questionn

THE GUILELESS QUESTIONNAIRE

We do not know who invented the questionnaire. But, anyway, he was a great man. For he gave something new to the world, and anyone who does that must be ranked high. He discovered how to get exact, utterly impregnable information on any subject, and having that information exactly and precisely what one wanted it to be.

To-day we can see about us everywhere the results of his golden discovery in full flower. It is a poor morning's mail that does not bring a set of questions to answer on something or other that the universe is sitting up to know about. In the breakfast newspaper we can learn the important facts that previous questionnaires have brought out.

For instance, we can learn that the Institute for Reasonable Temperance has sent out a questionnaire to clergymen and discovered that ninety-two percent of them favor liquor sales under proper regulation, while the Total Abstinence Society publishes the results of an inquiry which shows that ninety-three percent of the clergy favor total abstinence and the absolute prohibition of the sale of any alcoholic beverage. It would appear that exactly the same list of clergymen had been canvassed by each society, and, through questions, their fullest and frankest opinions had been drawn out. A peace society announces by its secretary that the tabulation of a searching questionnaire sent to 123,000 mothers discloses that ninety-seven percent of them do not want a larger navy and that probably the other three percent would also be in the negative were their replies intelligible. Rather than have the results open to doubt, the secretary has counted the obscure answers as in the affirmative.

But the queries of a defense association bring out utterly different totals; they find that, although the mothers of the land are against war, they are for an adequate defense which includes a big navy. Questionnaire addicts dig up all sorts of interesting facts about business; some find that business men are unitedly opposed to chain stores, while others find that business men are wholly for them. In a lighter mood, the announcement will be made of the positive preference of employers for brunette as opposed to blond stenographers. The royal road to knowledge is now by way of the questionnaire. And surely it is the logical way. For if you want to know something, why not ask? That no one may give a hang about knowing the truth on the subject does not matter to the addict. Neither does it matter that if business concerns must answer all the questions put to them, it may cost them collectively a great deal of valuable time. That only increases the import of the research.

And neither does it matter that it is in the drawing of the questions that the answers may be found. In fact, that is the great merit of this form of amassing knowledge. One does not have to take any chances. One may ask: 'Do you favor the Jones Bill as amended to afford relief along sound economic lines?' Then an overwhelming majority of the answers will be 'Yes.' But change the question to: 'Are you opposed to the Jones Bill as a raid on the public treasury?' The answers will also be 'Yes.'

But that, again, is the merit of the questionnaire. It is so utterly guileless.[1]

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[1] *Saturday Evening Post,* p. 24, February 9, 1929.

DESIGNING AND USING A QUESTIONNAIRE

Although the questionnaire method of securing information and of conducting research has probably been overworked during recent years, the fact remains that there are some types of problems—problems which are *worth attacking*—that cannot be attacked except by the means of a questionnaire. The questionnaire cannot, and should not, be abolished; but, it should be more intelligently used than is now the case. When it is necessary to use this instrument, the following directions and admonitions should be kept in mind in designing and distributing it:[1]

Value of, and necessity for, the study.—The first criterion which a questionnaire should meet is that it be used only on a study of value. The problem on which a questionnaire is designed to secure information should be one the solution of which would advance scholarship and add something to the sum of human knowledge; in brief, there should be a need for the study. Every study, for that matter, whether it uses the questionnaire method or the personal-investigation method, should meet this first test of *need* or *value.*

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[1] In giving instruction on this topic the author has found that his students have enjoyed, and profited from, the experience of criticizing questionnaires which they or other persons have designed.

In addition to meeting the criterion of need or value, a questionnaire study should be undertaken only when it would be impossible or impracticable to use the personal-investigation method in studying the problem. The student should not ask other persons to do work which he could do; the fact that much more of the student's time might be required to do the work is beside the question.

In this connection it is worth mentioning that the necessity for writing a thesis to meet one of the requirements for a degree is not sufficient justification for any study; writing a thesis is more than a mere chore. It is recommended, therefore, that in sending out a questionnaire the student avoid making the statement that he is "under the necessity of writing a thesis and is using the questionnaire method for securing his data." The persons who must spend their time in filling out questionnaires are not particularly interested in helping students merely to meet requirements. If a thesis has no other purpose than to meet a requirement for a degree it cannot be justified.

Necessary *versus* unnecessary questions.—Only those items of information which are pertinent to the investigation should be requested. Questions should not be set down at random without any consideration of the use which will be made of the information which the questions will elicit; instead, the questions should be formulated on the basis of a well-conceived plan, and that plan should be obvious to the respondent as well as to the designer of the questionnaire. Before he designs his questionnaire the student should definitely know the information which he will need in his study and he should formulate his questions to secure that information—no more and no less.

The questionnaire should not request information which is available through library sources, or which may be practicably secured through personal investigation. To violate the suggestion just mentioned would be to impose unnecessarily upon the good nature and time of the respondent; also such practice would be offensive to the respondent.

Ease of filling out the questionnaire.[1]—The questionnaire should be designed in such a manner that as little time and effort as possible will be required to answer it. To this end the questionnaire should be made as short as possible. A questionnaire which requires only a few minutes to answer will likely secure a larger response than one which requires several hours to answer. Unless a study is obviously useful, and unless the correct approach to the respondent is made, a questionnaire of several pages is likely to find its way immediately into the waste basket.

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[1] For a questionnaire which illustrates these and other matters, see p. 199 of this book.

The student can save the time of the respondent by eliminating all unnecessary questions and by reducing to a minimum the necessity for writing long answers; moreover, the respondent should not be requested to make any computations which the student can make from the data which the respondent gives. In brief, the respondent should not be requested to do anything which the student can do. In the directions which accompany the questionnaire it is a good plan to tell the respondent approximately how long it will take him to answer the questionnaire; the length of such time may be ascertained by the student when the questionnaire is tried out on a few respondents.

Revising and trying out the questionnaire.— When the student has submitted his questionnaire to probably several revisions, and has advanced it to such form that he is unable to make further improvement of it, he should request his professor or professors to criticise it. After it has had the criticism and the approval of the student's professor or professors it should then be tried out on a small and representative group—for example, six, eight, or ten—of the persons to whom it is to go finally. After that try-out, it should be revised, if revision is needed, and be again submitted to the student's professor or professors. When the professor or professors have approved the final revision, the questionnaire is ready to be typed, mimeographed, or printed in its final form.

Clearness of questions.— Each question should be immediately clear to the respondent. A question should be stated in such a manner that only one interpretation—the *correct* interpretation—will be placed upon it. A questionnaire which the respondent cannot readily understand either will not be answered at all or will be answered inaccurately or incompletely. Probably a questionnaire which is not clear *should not* be answered, because to answer it might have the effect of encouraging slipshod work.

After a question is formulated, it should be carefully examined by the student to ascertain whether it is susceptible to more than one interpretation; if the student thinks that a question is susceptible to different interpretations, he should revise it until it is as clear as crystal and can be interpreted in only one way. When the questions meet the highest standards of the student they should then be submitted to other competent persons for criticism; after that they should probably be tried out on a few persons to whom they are to go finally. When all of these steps have been taken, the questions may be placed in the questionnaire with large assurance that they will be clear.

Avoidance of leading questions.—The inclusion of leading questions, that is, questions which suggest the type of answer wanted, should be avoided. Any semblance of demanding categorical 'yes' or 'no' answers should also be avoided, because the respondent cannot always truthfully give a categorical answer; the respondent should be given the opportunity to qualify and to explain, and space should be left in the questionnaire for such qualifications and explanations.

Securing a large percentage of returns.—In designing and sending out a questionnaire the aim should be to secure not only as large a percentage of returns as possible, but also frank, complete, and accurate answers to every question. The student will be aided in securing the results just mentioned by early creating "good will", on the part of his respondents, toward his study. In attempting to build up this good will he should consider the use of the following devices which have been frequently and advantageously employed by other students: (1) enclosing a short letter (preferably a personal letter) with the questionnaire, this letter to state briefly the purpose and the value of the study and to request the recipient of the questionnaire to fill it out; (2) having the professor who is directing the study to sign the personal letter with the student; (3) sending a letter to the prospective respondents before sending the questionnaires to them, and in this letter stating the purpose and the value of the study and asking whether they would be willing to coöperate in the study; (4)

promising a summary of the results to all respondents; (5) making a contact with an agency or organization, which has "extractive powers," with the aim of getting such agency or organization to send out, or to sponsor in some manner, the questionnaire; and (6) enclosing two copies of the questionnaire, one for the files of the respondent and the other to be filled out and returned.

Sending "follow-ups."—When printing or mimeographing the questionnaire, ample extra copies for follow-up purposes should be secured. It is an unusually successful questionnaire which secures a complete, or nearly complete, response to the first request. The number of follow-ups to be sent will be determined, of course, by the degree of need for the data not yet sent in. If it appears that the replies are representative, and if the number of replies seems sufficient to permit conclusions to be drawn with probable accuracy, a follow-up, or further follow-ups, will not be necessary. In some studies, on the other hand, the missing data will be so important that it will be advisable to send several follow-ups in an attempt to secure them.

Provision for tabulating responses.—The questionnaire should be designed in such a manner that the information secured from it may be easily tabulated and organized by the questioner. On most questions, data which may be easily and objectively tabulated, such as those of a 'yes' or 'no', a checking, a ranking, or a weighting type should be requested. In investigating some problems, however, it is advantageous, at least on some questions, to give the respondent an opportunity—perhaps to request him—to qualify his answer, to explain, or to express his opinion.

Ample space for answers.—In designing the questionnaire, ample space should be left after each question for the respondent to write the answer to the question, or the respondent should be directed to use a blank page or pages for more complete answers. It is more convenient to provide this space in the questionnaire itself, and immediately following the individual question.

The respondent's signature.—In case the information which the respondent would give might embarrass him, if it is not necessary to identify each return, the respondent may be told to decide for himself whether he will sign his name or omit it. On some types of studies the waiver of the signature tends to stimulate the giving of information more freely. Of course, if it is necessary for each reply to be identified, it will be necessary to request all necessary identification data, such as the name, address, and position of the respondent.

Essentially the same result as in the waiver of the signature may be secured by the questioner informing the respondent that the information which he (the respondent) gives will not be used in such a way that the source of the information will be known. When once made, such a promise to keep information confidential should be kept inviolable.

Enclosing a return and stamped envelope.—To save the respondent the time of addressing a return envelope, and the expense for return postage, it is a good plan to enclose with the questionnaire a self-addressed and stamped envelope for reply. It should be made certain also, when the questionnaires are mailed to the respondent, that there is sufficient postage on them to carry them; it seems trite to make this suggestion, yet the present author has had the experience of paying "postage due" on several questionnaires which he has received.

Return name and address.—The questionnaire should have somewhere—preferably at the beginning—the name, the position, and the address of the person to whom it is to be returned. It is advisable that this information appear on the questionnaire, even though it may have appeared in a personal letter and on a return envelope, because the respondent may lose the personal letter and the return envelope.

Size and kind of stock.—If the questionnaire is on a sheet, or sheets, of paper, it is advisable to use the standard letter size, that is, 8½ x 11 inches. That size of sheet fits the ordinary letter file and is easy to fold and to insert in the ordinary envelope. If a card is used, it should be one of the standard sizes, that is, 3 x 5 inches, 4 x 6 inches, or 5 x 8 inches; these sizes of cards are recommended because they may be readily filed in standard index drawers. Cards of 4 x 6 inches, or of 5 x 8 inches, are seldom used in questionnaires which must be mailed, because they are too large for the ordinary size of envelope. The paper or card which is used should be of such a quality that the respondent could, if he desires, use ink in writing his answers.

The printing, mimeographing, or typing

should exhibit excellent workmanship. Every figure, symbol, and letter should be distinct. The mimeographed questionnaire is usually the cheapest and will be sufficient for most investigations. If several hundred or several thousand copies will be needed, the advisability of having the questionnaire printed should be considered.

MENTIONING SHORTCOMINGS IN THE DATA

If there are gaps or possible errors in the data, the student should be frank in indicating them. He should be diligent in pointing out any limitations of the data and the general difficulties under which the investigation was pursued. It is more honest and scholarly to make apologies for the weaknesses of an investigation than to attempt to "cover up" the weaknesses; a "covering up" policy is neither scholarly nor honest. A true scientist, however, will not be forever making excuses and apologies, but instead will obviate whenever possible the necessity for excuses and apologies; never will he plead lack of time or lack of ability to do a thing in the correct way.

In pursuing his investigation, several related problems, which are worthy of the labor of future investigators, will probably occur to the student. At an appropriate place in the thesis (possibly in a separate section or chapter) the student should make a record of such problems as have occurred to him. Giving attention to this matter will do a great service to future students and will advance the interests of scholarship.

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AMOUNT OF DATA TO SECURE

Tendency toward insufficient data.—Sufficient data should be secured to give the thesis enough substance and stability to permit conclusions to be stated with probability of accuracy. It is worth mentioning that most theses tend to have too few data rather than too many. Of course all data which are included should be pertinent to the study, otherwise the study will not have the necessary unity.

Making a sampling of data.—On many problems it will be impossible to include data on every possible case. In that event the student may use a sampling. For example, if he were studying the salaries of elementary school teachers in the State of Ohio it would not be necessary for him to ascertain the salary of each of the approximately 30,000 elementary school teachers. Instead he might select a representative ten percent of the teachers in question. It would be very important though for him to make sure that his sampling was a representative one. He would have to agree on the basis for selecting this ten percent and would have to describe and explain it in the write-up of his study. In other words, there must be a *basis* on which the sampling is made and that basis should be the best one possible.

REVIEW QUESTIONS

1. What are the advantages of the personal-investigation method of collecting data compared with the questionnaire method? Account for the large amount of adverse criticism of the questionnaire method. When should the questionnaire method be used in making an investigation? When should it not be used?

2. If it is necessary to use a questionnaire, what are some of the more important matters which should be kept in mind in designing, distributing, and using it?

3. What are primary sources? What are secondary sources? Which type of source should be relied primarily upon in scientific investigations? Why?

4. When, if ever, should the research worker acknowledge that his investigation has weaknesses? Explain.

5. How may a random sampling be made? Why is it necessary to have a good basis on which to make a sampling?

CHAPTER V

CONFERENCES WITH INSTRUCTORS

THE DIRECTOR OF THE THESIS

Selecting the director.—In most universities some member of the instructional staff of the college or department in which the student is majoring has the responsibility of directing, of supervising, and of finally approving or rejecting, the student's thesis. A few universities give this responsibility, particularly in the case of a Doctor's thesis, to a small committee of professors. In all universities, therefore, the student who is writing a thesis must "make his peace" with the director, or the directors, of the thesis. In practically all universities the student has the opportunity of selecting the director of his thesis; in a few universities, on the other hand, the director is selected for him either by his dean or the chairman of his department.

I chose the dept.,
They chose
advisor

Importance of the director.—It is commonly recognized that the director of the thesis determines in large measure the merit of the thesis. He, of course, does not write the thesis, but he tells the student how to write it and he sees that it is written in that way. If the director is scholarly, he will insist upon getting, and will get, scholarly written theses. If, on the contrary, the director is not scholarly, the theses which he directs will not likely have a uniformly high quality. The student is fortunate who selects, or has selected for him, a director for his thesis who knows what a good thesis is and who insists that every thesis which he approves shall meet the highest standards of scholarship.

Arranging for Conferences

The importance of conferences.—It was remarked in the first pages of this book that the chief purpose of writing a thesis is to give the student training in doing research and in the orderly and otherwise scholarly presentation of the results of research. In order that the student may, therefore, receive that training, and in order that he may write the best possible thesis, he should keep closely in touch with the professor who is directing his thesis. This does not mean that conferences are to be held with professors in order to get the work of the thesis done; the student should not ask his professors to do work which he can do: he should not be a parasite or a "sponger," even though he might be permitted to be such. When in doubt, however, on some important matter he should consult his professors, for some matter which is improperly handled may require that either the whole thesis or a large part of it be re-written. It is well to keep in mind that professors can be expected only to direct the writing of theses; manifestly they cannot be expected to *write* them. The more independently the student works, provided of course that he is always scholarly, the greater will be his prestige with his professors.

Some suggested times for conferences.—A * *
few times when conferences with professors When to me
would appear desirable are: (1) when choosing adviser 1
a problem and planning the general attack
upon it; (2) when a definite—though it may 2
be tentative—outline of the problem has been
prepared; in general, this outline should include
a definite delimitation of the problem, a a
statement of the method or methods of attack, b
and a mention of the sources of data; (3) c 3)
after the investigation of the problem has been
begun, the technique for the problem has been
tried out, and a few data have been collected;
(4) when all data have been collected and are 4
ready to be organized into final form; and

5

(5) after the professors have read the complete thesis or a part of it and are ready to report their criticisms.

Initiative in arranging conferences.—Since the responsibility for preparing the thesis is primarily on the student, he should take the initiative in seeking out his professor or professors whenever a conference is needed. In order that time may be saved, the student should come to a conference, particularly a conference of his own asking, armed with some definite questions or propositions. And pray that these questions shall not be questions which competent graduate students should answer for themselves!

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d proposal.

Accepting criticism.—In one of his essays Emerson wrote that, "What we most need in life is someone to make us do the best we can." Since the student grows from constructive criticism, criticism of the shortcomings of his work should always be welcomed,—in fact, it should be *sought.* Praise, when properly bestowed is helpful, yet it alone is never enough. The imperfections of the author's work—and all works have some imperfections—need to be called to the attention of the author if he is to continue developing; not to call any imper-

h out
tiicism

fections of the thesis to the attention of the author is to cheat him of valuable training. The function of the critic is not altogether to bestow praise: it is largely, or at least partly, to find fault. A great actor once said: "When a critic applauds me, I smile and get lazy; when he complains, I frown and get to work." The professor's function as a critic of a student's thesis is dual, namely, (1) to uphold the standards of scholarship, and (2) to save the student from the criticism which comes to authors who produce poor works.

REVIEW QUESTIONS

1. To what extent does the merit of a thesis depend upon the professor who directs the thesis? Explain. What special qualifications should the professor who directs a particular thesis have? Should an attempt be made to select a critical or an uncritical professor?

2. Why should the student have frequent conferences with his professors when he is preparing a thesis?

3. What are some appropriate times for these conferences?

4. Who should take the initiative in arranging for these conferences?

5. Discuss the importance of criticism in literary and scientific endeavors. Do you agree with Emerson when he says that, "What we most need in life is someone to make us do the best we can?" In what spirit should criticism of literary and scientific endeavors be given and be accepted?

CHAPTER VI

THE ORGANIZATION AND INTERPRETATION OF MATERIAL

PROPER ORGANIZATION AND INTERPRETATION

Importance and difficulty of.—However difficult and important the task of collecting the material for the thesis is, of still greater difficulty and importance is the task of organizing and interpreting the material. The collection of the material is often a task easily performed—in fact, it is often a mechanical task which could be performed by almost any person, provided he had intelligent guidance; but when we consider the organization and interpretation of the material—well, that is a different matter! In organizing and interpreting his material an author has his chief opportunity to display his ability. It is the clear and logical organization, and the scholarly interpretation, of data—provided, of course, that the data are inherently valuable—which give meaning, vitality, interest, and purpose to the data.

''Humanizing'' knowledge.—Manifestly that research is most valuable which advances human progress in some manner; in fact, only that kind of research is justifiable. Research which does not now, or never will, advance human progress evinces a waste of time and tends to bring the efforts of the research worker into disrepute in the estimation of the public. Research which is reported in a well-organized, clear, and interesting manner will be sought after more and consequently will further human progress more than research that is reported in a less intelligible form. Frequently, even highly technical material can be presented in such a manner that it may be easily read and will make an appeal to a large group of readers; at any rate, the ideal which the research worker should always keep in mind is to present his material in such a way that it will be as easily read as possible and will make its appeal to the largest possible group of readers; in other words, the research worker should attempt to "humanize" his knowledge as much as possible. It follows, therefore, that every literary technique and device which will aid the reader to read, to understand, and to enjoy, the thesis should be utilized by the author in the organization and interpretation of the material of the thesis.

SUGGESTIONS ON THE ORGANIZATION OF DATA

Unity.—The thesis, like any other piece of writing, should have *unity;* that is, it should deal with only the subject which it announced in the beginning it would deal with. It may, of course, include with propriety a number of subordinate topics, provided those topics are logical divisions of, and explanatory to, the main topic. In order that unity may be facilitated, all material should be selected with great care; this implies that only the material which contributes to the solution and the understanding of the problem should be included. In other words, a "text should be taken" in the beginning and that text should be closely followed. A rambling thesis is as distasteful to a reader as is a rambling sermon or lecture to a listener.

In order that the interests of both the author of the thesis and the reader of it may be better served, it is usually desirable for the author to organize the thesis into divisions such as chapters, and sections, with each of the divisions having a well-chosen caption. All of the divisions should, of course, contribute to, and be a part of, the logical development of the main problem or topic of the thesis. (See page

29 of this book for suggestions on the making of an outline). It should be kept in mind, however, that too many divisions in a written document tend to make the document too mechanical and thus difficult to read. Our best novels are among our clearest literary productions, yet they have few divisions.

Coherence.—The thesis, like every written document, should have *coherence;* that is, every word, sentence, paragraph, section, and chapter should logically follow the part which immediately precedes. A written document which lacks coherence is sure to be incoherent, and it is not likely to be relished by the reader. Much re-arranging of the material and coördinating of the various parts will generally be necessary if the standard of coherence is to be met. An order of topics, which best serves the needs of clearness and logic, should be chosen. This order may be determined by, and based on, such matters as importance, time, complexity, cause and effect, and similarity or contrast.

Emphasis.—In addition to having unity and coherence, the thesis, like every written document, should be written with regard to the relative importance of the several topics and the relative need of developing them; that is, the several topics must have the proper amount of *emphasis.* The more important topics should be fully developed, whereas the topics of less importance, or those which are somewhat commonplace, should be discussed only briefly. All of this, of course, requires discriminating judgment.

SUGGESTIONS ON THE INTERPRETATION OF DATA

Generalizations.—The data should be organized in such a manner that some generalizations may be made; otherwise the reader may be left in doubt regarding what the study is "all about." Merely to show the data is hardly sufficient; the data should be *interpreted* as well as shown. Since he has probably worked on his problem several hundred hours, the author of a thesis is in a better position to interpret his data and to draw conclusions therefrom than any other person, and he should take advantage of that opportunity. Judiciousness, however, should always be used in stating conclusions and in making interpretations; possibilities or probabilities should not be stated as demonstrated facts, nor mere possibilities as probabilities. Such conclusions and interpretations as are affirmed should grow out of the data of the investigation; they should not be merely guesses, prejudices, or wild theories. The scientist and the scholar have learned to suspend judgment until they are certain of their conclusions.

Summary of the thesis.—The thesis should be summarized at either its end or its beginning in a few outstanding propositions. It is worth remembering, however, that an accurate and clear presentation of the material obviates the necessity of giving much space to the summary. The summary should emphasize the significant aspects of the investigation; it should not be merely a "rehash" of unimportant detail. Some excellent writers follow the practice of briefly summarizing each chapter at its close, then at the end of the manuscript they summarize the whole work. A good summary should realize the following aims: (1) it should enable anyone, who does not have the time or the desire to read the whole manuscript, to secure from the summary the outstanding facts and conclusions of the study; (2) it should give anyone who has read the whole manuscript a new, an integrated, and a

Why a
summary i
necessary
helpful

more lasting view of the manuscript; and (3) it should help anyone who may read the summary to decide whether or not he should read the whole manuscript. The usual practice is to place the summary at the end of the manuscript, but there has developed during recent years a noticeable tendency to place it at the chief point of vantage in the manuscript, namely, at the beginning.

REVIEW QUESTIONS

1. What can be said of the importance and the difficulty of the organization of material compared with the collection of the material? Explain.

2. What does it mean to "humanize" knowledge? Why should knowledge be "humanized"?

3. Define each of the following principles of organization in writing: (1) unity; (2) coherence; and (3) emphasis. Discuss the importance of an author keeping each of these principles in mind.

4. To what extent should interpretations be placed upon the data of the thesis? In what manner should interpretations be stated? Why should the scientist and scholar usually maintain suspended judgment?

5. What are the advantages of a summary? Mention the type of material which should be placed in the summary. Where should the summary appear in the thesis?

CHAPTER VII

ENGLISH COMPOSITION OF THE THESIS

Importance of Good English

It would be easy for a careless or an unsophisticated reader of St. Paul's epistles to the Corinthians to gain the impression that literary excellence is of minor importance in written documents. To secure such an impression would be unfortunate, for the fact is that many written documents, of excellent content, have been badly handicapped because their authors failed to speak with the tongues of men and of angels. If a written document is to be read, and if it is to live for any length of time, it must have literary excellence. A thesis is no exception to this rule.

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be well w

The student should devote the most intelligent and conscientious care to the English composition of his thesis. He should ever bear in mind that his scholarship is judged largely on the basis of his ability to present his material properly to the reader. Even the touchy little tent-maker from Tarsus would admit that the sounding brass and the tinkling cymbal of precise and clear diction have helped many documents of inferior content to gain attention. Let us, therefore, turn our attention to some dressmaking hints which are designed to assist the student to clothe his thesis in attractive, clear, and forceful form.

CHARACTERISTICS OF EXCELLENT WRITING

Assuming that an author really has something worth writing about—that is, assuming that his manuscript has valuable content—there are but three prerequisites to excellent writing, namely, *accuracy, clarity, charm.* In order that the standards of accuracy, clarity, and charm may be better met, meticulous care should be devoted to such matters as spelling, punctuation, capitalization, sequence of tenses, choice of words, sentence structure, paragraph structure, and chapter organization.

Accuracy and clarity.—In all forms of expression, whether written or oral, the student must keep in mind the meaning of Von Moltke's final instructions to his officers at the beginning of the Franco-Prussian War: "Remember, gentlemen, that any order which can be misunderstood, will be misunderstood." In urging clarity of expression upon his officers it is reported that Von Moltke was prompted to do so because of his knowing about the ambiguous orders which resulted in an almost complete annihilation of the Light Brigade in their heroic charge at Balaklava in 1854. It is not enough that a statement be so written that it *may be* understood: it should be so written that it *cannot be* misunderstood.

The basis of both accuracy and clarity rests largely upon mutually understood definitions of terms. Much of the vitality of long-winded and seemingly endless debates—whether in the barber shop, the rural store, or the United States Senate—is derived from the fact that the contending parties attach differing meanings to the same word or words. After the smoke of battle has cleared away the debaters often learn that they have been arguing fiercely for the same point. It is the duty of the writer to lay down explicit definitions for the terms which he uses in order that the reader may be able to follow him intelligently. If the writer will set, and realize, the aim of making his manuscript clear to the lower ten percent of his potential audience he will usually have served the best interests of his whole audience,

Define yo
terms exp

Write for t
lower 10% of
audience

for a type of treatment which is best for the lower ten percent is usually the best for the upper ten percent and for all other persons between these extremes; it is impossible to make a manuscript "too clear."

[illegible] for sake
clarity, to
[illegible]

Students will find it advisable to re-write, perhaps several times, many or all of their propositions, in order that all obscurities and ambiguities may be removed. As a rule, the student must be amenable to Boucicault's axiom: "Plays are not written; they are re-written." Likewise, it may be said that the best theses are not written, but are re-written. It is reported that Abraham Lincoln, throughout his life, would reduce to writing and then would re-write many times any proposition about which he was thinking in order that there should be no obscurities or ambiguities, even for the uneducated, in the final statement of the proposition; as a consequence, Lincoln's statements are models of clarity.

use the right
[illegible], allusions
to clarify
point

To secure clarity an author should be careful in the use of illustrations, allusions, and associations of ideas with which to develop his thought. For example, when the present author alludes to St. Paul's epistles to the Corinthians in the first paragraph of this chapter—or were he to say, "Do not hide the light of clarity under the bushel of inappropriate and irrelevant illustration"—does he know whether his readers ever read the Bible sufficiently to understand those allusions? Or again, were he to say, "Many an author escapes the Scylla of poor organization of his theme to fall into the Charybdis of poor expression"—how does he know whether or not his readers ever heard of either Scylla or Charybdis? Having achieved accuracy in the logical steps by which he has organized his thought, the student must, however, be careful to make sufficient use of association of ideas and depth of treatment to bring out exactness of meaning.

As an aid to lucid writing, the ambitious author should study words. Such study will be found as engaging as it is useful. Such books as Crabb's *English Synonyms*, Fowler's *A Dictionary of Modern English Usage*, and Roget's *Thesaurus of English Words and Phrases*, will be found interesting and helpful in teaching one the exact meanings of words. Words which are obscure, ambiguous, unnecessarily technical, or otherwise inappropriate should be avoided. The practice of Robert Louis Stevenson who, it is reported,

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would oftentimes spend several hours in searching for a particular word which he needed to express a certain meaning, might well be kept in mind as an ideal.

Having the best words, the writer must work for excellent sentence structure. Short sentences are the most forceful, generally speaking. At the same time, terseness is always subject to the danger of ambiguity. The brevity for which the soldiers of ancient Sparta were famed, while often possessing a sturdy, rugged sort of epigrammatic charm, by its very bluntness often missed the clearness and ease of understanding attained by the more loquacious Athenians. The writer must use sufficient qualifying words and phrases to make his meaning precise, but at the same time must practice perfect economy of verbiage.

→ syntax
sentences
perfect
of

The sentences must be grouped in paragraphs in such a way that every paragraph will possess unity and coherence. A paragraph represents a single unit or step in the development of a chapter or other division. The component sentences of a paragraph must be arranged to bring out the thought in orderly sequence and, in general, to prepare the ground for what is to follow.

The questions of punctuation, the use of abbreviations,[1] and capitalization, are largely decided by the usage learned by the individual student, unless subject to specific rules of the university or the publisher to whom the thesis is to be submitted. It is essential, however, that the author adopt and maintain uniformity in matters of the mechanics of composition. In writing, as in other matters, it may be truly said that, "Consistency, thou art a jewel."

Charm.—As for charm, we must fall back on the old rhetorical dictum that "the style is the man." Charm is a fickle, temperamental goddess who must be courted long and assiduously. Charm is the essence of the courage, sunshine, and zest reflected "between the lines" from the author to the reader. This quality is developed only after much effort and study and practice by the writer; it is the final test for great writers.

Generally speaking, the student will have obtained sufficient charm in the production of his thesis if he succeeds in achieving accuracy and clarity. That theses be written in a charming style—though a splendid ideal—is prob-

Accuracy }
clarity

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[1] Since abbreviations are not always clear to the reader, the better practice is *not* to use them, but to write the words in full.

ably too much to insist upon; but it is not too much to expect that they be written in precise and clear diction.

The chief means through which the student may improve his ability to write is to devote care to everything that he writes. Unless such care is given to writing his thesis, the student misses much of the valuable training which the writing of the thesis is expected to give. A great writer once said that, "Easy writing makes hard reading, and hard writing makes easy reading." Few persons, who write easily and quickly, write well. Easy writing seldom obtains among the eminent authors of the world. To produce a masterpiece which will live through the ages requires hard work—work extending over probably several years. Art is long, and Carlyle's saying that, "Genius consists in an infinite capacity for taking pains," is not far from correct.

Edwin E. Slosson's Advice to Writers

The late Edwin E. Slosson undoubtedly did more to popularize science than any other person of this, or of recent, generations. Being both an eminent scientist and an excellent writer Doctor Slosson was competent to describe scientific investigations in such a manner that even "Mr. Average Citizen" had no difficulty in understanding them. "Mr. Average Citizen" enjoyed, and profited from, reading Doctor Slosson's articles, and hundreds of the articles appeared in popular periodicals such as *Colliers.* Doctor Slosson once remarked whimsically that he made his living trying to re-write and interpret Doctor's and Master's theses in such manner that ordinary people could understand them. His great contribution was to "humanize" scientific investigations.

Because of his standing as a scientist and a writer, and by virtue of his experience in examining and editing hundreds of scientific documents, Doctor Slosson was very competent to give helpful hints to "would-be writers" of scientific documents. Fortunately, a few months before his death he published a short statement in which he mentioned some of those helpful hints. A summary of the hints is given in the following paragraphs in Doctor Slosson's own words:[1]

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[1] "For Would-Be Writers," *Journal of the National Education Association,* XVI (January, 1927), pp. 27-28.

1. Don't overestimate the reader's knowledge and don't underestimate the reader's intelligence. He may not know as much as you about this particular thing—let's hope not anyway—but otherwise he may be as bright as you are—let's hope so anyway. . . .

2. Don't think that because a thing is old to you it is known to the public. Many of your readers are still living in the nineteenth century; some of them in the eighteenth. . . .

3. Don't imagine that the readers of a paper are, like your pupils, obliged to pretend to pay attention to you no matter how dull you may be. "First catch your reader," is the rule of successful writing. Don't leave out the human interest. Your reader is a human being even if you are only a scientist.

citing

4. Don't forget that your reader is interrupting you every ten lines to ask, "Why?" "What for?" or "Well, what of it?" and if you don't answer his tacit questions he will soon stop reading.

[illegible]

5. Don't think that you can make your topic more attractive by tricking it out with the fairy lore or baby talk or irrelevant jokes or extravagant language. Bring out its real and intrinsic interest as forcibly at you can. Set off the red fire if you like, but be sure it lights up the object instead of drawing attention away from it.

6. Don't say "this discovery is interesting" unless you can prove that it is, and if you can prove it, you don't have to say it. . . .

7. Don't back up too far to get a running start. Remember the man who wanted to jump over a hill. He ran a mile to work up momentum and was so tired when he got to the bottom of the hill that he

had to sit down and rest. So will your readers. Ninety percent of the manuscripts that I have handled in twenty years as an editor would have been improved by cutting off the first page or paragraph. Yet authors, like hens, kick on decapitation.

8. Don't imagine that you must add a pretty but superfluous paragraph at the end, like the coda of a sonata. The most effective close is to quit when you get through.

9. Don't shoot in the air. Aim at somebody. You may miss him, but you are more likely to hit somebody else than if you aim at nobody. Look out of your window and note the first person coming along the street. Imagine yourself stopping this man or woman on the sidewalk, and like the Ancient Mariner, holding his or her attention till you have told your tale to the end. . . .

10. Don't think you must leave out all the technical terms. Use them whenever necessary without apology, and, if possible, without formal definition. People are not so easily scared by strange words as you may think. They rather like 'em. Kipling is read with delight by old and young, yet his prose and verse are crammed with technical terms. . . .

REVIEW QUESTIONS

1. Compared with the content of the thesis, what is the importance of good English in the thesis?

2. Discuss the importance of accuracy, clarity, and charm as standards which written documents should meet. Discuss the relative importance of the three standards just mentioned.

3. Recall a few of the literary masterpieces which have lived for a century or more and attempt

to determine the qualities which these masterpieces have which have made them live.

4. What steps should the student take to make sure that the English composition of the thesis is correct in every particular?

CHAPTER VIII

CITATIONS AND FOOTNOTES

THE NECESSITY FOR CITING AUTHORITIES

The authority for each important statement of fact and for each opinion quoted literally or otherwise should be cited in the thesis. Unless authorities are cited, the reader is likely to be left in doubt regarding the scientific merit of the investigation; moreover, any failure to cite authorities tends to make the research worker careless, a habit which he cannot afford to have fasten itself upon him. In order to save time in having to obtain them later, all necessary data on a reference, such as the name of the author, the title of the reference, and the pages which are referred to, should be secured when the reference is first examined. Meticulous care should be taken to see that all references are accurately, completely, and consistently cited.

THE TWO PLANS OF CITING AUTHORITIES

Two plans of citing authorities are in use at the present time. The plan which is usually followed is to cite authorities in the footnotes; the other plan, which is used by only a few authors and publishers is to cite them in the body of the pages of the manuscript. *Whichever plan of citing is adopted should be followed consistently throughout the manuscript.* The two plans are described in detail and are illustrated in the next following pages.

Plan 1: Footnote citations.[1]—A footnote citation should always give enough information to permit the reader readily to locate the reference if he should have occasion to use it. The form for a footnote citation is the same as that for an entry in the final bibliography, except that in footnote citations for books, bulletins, monographs, reports, and similar works, only the author, the title of the work, and the pages referred to, need be given, provided of course that complete data on the reference are given in the bibliography. In a footnote citation, unlike an entry in the final bibliography, the author's Christian name comes *before* his last name; for example, "L. V. Koos," rather than "Koos, L. V." Note the following models for footnote citations for various kinds of references:[1]

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[1] These suggestions are based in the main on *A Manual of Style* (Ninth Edition), of the University of Chicago Press, and on *Catalog Rules of the American Library Association* (American Edition). For more detailed suggestions, if needed, these works may be consulted.

A. Models for books:

[1] L. V. Koos, *The Junior High School,* pp. 43-48.

[2] William James, *Principles of Psychology,* Vol. I, p. 96.

[3] *The Federalist,* p. 46.

B. Models for magazine and newspaper articles:

[4] J. F. Bobbitt, "High School Costs," *School Review,* XXIII (October, 1915), pp. 506-510.

[5] "Research for Teachers," *Journal of Educational Research,* XX (June, 1929), p. 42.

[6] "Question Pests," *Chicago Tribune,* Part I, p. 6, December 9, 1928.

C. Models for bulletins and monographs:

[1] Fred Engelhardt, and Ernest O. Melby, *The Supervisory Organization and the Instructional Program, Albert Lea, Minnesota,* p. 34, Table 17.

[2] *A Handbook of Major Educational Issues,* Research Bulletin of the National Education Association, IV, No. 4 (September, 1926), pp. 185-186.

D. Models for legal material:

[1] *Laws and Statutes of California,* 1881, Sec. 1793.

[2] *School Laws of the State of Ohio,* Edition of 1928, p. 11.

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[1] See pages 182 and 183 of this book for sample pages containing footnote citations.

Other orders of entry of data and other plans of punctuation and of capitalization may be used, provided they are followed consistently throughout the manuscript; consistency in the matter is *sine qua non.*

[3] Appeal of John W. Barnes, 6 R. I. 591.

[4] Spencer *v.* Joint School District, 15 Kan. 259.

[5] *Legislative Acts of the State of Ohio,* CX, Sec. 6474.

[6] *United States Laws, Statutes,* etc., 1889-1890. (51st Cong., 1st Sess.)

E. Models for unpublished material:

[1] Otis John Barnhill, "Comparison of Requirements of American Universities for the Master's Degree," p. 46. Unpublished Master's thesis of Ohio State University, 1928.

[2] Personal letter from J. W. Jones, dated September 6, 1929.

Avoiding repetitions of references.—In order to avoid unnecessary repetitions of references, or parts of them, the following expressions may be frequently used in making footnote citations:

1. *Ibid.* (for *ibidem,* meaning in the same place) indicates a reference to a work which has been cited immediately above. It indicates that the name of the reference is the same as the reference which has been cited immediately above, though the pages are not the same.

Examples:

[1] Ellwood P. Cubberley, *The Principal and His School,* pp. 50-53.

[2] *Ibid.,* pp. 83-84.

[3] *Ibid.,* p. 185.

2. To avoid repetition of the title of a work by the same author, a work which has been previously referred to in the footnotes may be cited by giving the name of the author, followed by the abbreviation, *op. cit.* (*opere citato,* meaning the work cited), and that followed by the pages of the work referred to.

Example:

[1] Fletcher Harper Swift, *A History of Public, Permanent Common School Funds in the United States,* pp. 72-80.

[2] H. L. Smith, *A Survey of a Public School System,* p. 40.

[3] Fletcher Harper Swift, *op. cit.,* pp. 120-121.

3. The abbreviation, *loc. cit.,* or *l. c.* (*loco citato,* meaning the place cited), when used following an author's name, denotes a citation to the author's same work previously referred to and to the identical matter of the work.

Example:

[1] B. R. Buckingham, *Spelling Ability; Its Measurement and Distribution,* pp. 40-42.

[2] Ward G. Reeder, *The Fundamentals of Public School Administration,* p. 8.

[3] B. R. Buckingham, *loc. cit.*

Cautions and further suggestions concerning footnote citations.—The following cautions and further suggestions concerning the making of footnote citations will be worth keeping in mind:

1. Every footnote should be placed at the foot of the typed page on which the reference index for the footnote appears, and all footnotes except those for tables and illustrations should be separated from the remainder of the page by a line of, say, two or three inches in length, drawn across the page beginning flush at the left-hand margin; one space should be left between the last line on the typed page and the two or three-inch line just mentioned. For footnotes to tables and illustrations, see suggestions 5 and 6 following.

2. It is suggested that the first word of each footnote be indented the same amount of space as the paragraphs of the thesis are indented. It is permissible, however, to run the first word flush beginning at the left-hand margin of the page; but, be consistent.

3. If the thesis is divided into chapters, the numbering of the footnotes for each chapter may be begun with footnote 1; if it is not divided into chapters, the footnote references may be numbered consecutively, beginning with number 1, through the whole manuscript. Some authorities and style books suggest that the numbering of footnotes be continuous *on the page,* and not continuous throughout the

manuscript or a division of it; that is, they suggest that the first footnote on each page be numbered 1; that practice is used in the footnotes of this book.

4. For reference indexes, numerals should, as a rule, be used. Only in special cases should letters (*a, b, c,* etc.), asterisks (*), or other types of indexes be used; for example, letters—small letters are meant—and similar indexes should be used in tabular or algebraic matter, where numerals would be likely to confuse the reader.

5. For reference indexes to tables and illustrations, to avoid confusion, it is advisable to use small letters (*a, b, c,* etc.), asterisks (*), or some other type of index, instead of numerals; however, the use of numerals in such instances is permissible. The reference indexes to tables and illustrations do not have to be consecutive through all tables or illustrations of the manuscript; for example, the asterisk (*) may be used as a reference index to Table I and re-used in each succeeding table if desired.

6. Any footnotes to tables and illustrations should appear immediately following the tables and illustrations. (See the models on pages 186 and 193 of this book).

7. It is suggested that each reference index in both the text and the footnote be elevated slightly above the alignment of the word which it precedes or follows, as [1], [2], [3], [4], etc.

8. The punctuation, capitalization, and order of entry of the data of each footnote should be carefully noted; uniformity in these matters should be secured in all references which are similar.

9. The reference index should come after the punctuation mark that follows the word, sentence, etc., to which the footnote refers; for an illustration of this point see suggestion 11 below.

10. Footnotes should be typed in single-space lines. If more than one footnote appears on a page, double spaces should be left between each footnote.

11. If the author's name is given in the text in connection with a statement referring to, or a quotation from, his work, his name should not be repeated in the footnote; in such instance the footnote should begin with the title of the work; for example:

> Marcus W. Jernegan shows that Massachusetts enacted, as early as 1647, a state-wide law requiring communities to establish schools.[1]
>
> ---
>
> [1] "The Beginnings of Public Education in New England," *School Review,* XXIII (June, 1915), pp. 361-380.

In referring to persons do not become trite in the use of titles or "academic millinery." "Marcus W. Jernegan," for example, will suffice; it is not necessary to use the title of "Professor," "Doctor," or "Mister." If a title is used in connection with a person's name, be sure that the title is accurate; not all professors are "doctors."

12. It is better to give the exact pages of a work that is referred to rather than to use the symbols f. and ff.; thus, not p. 435 f., but pp. 435-436; and not p. 435 ff., but pp. 435-437; f. and ff. are not definite enough.

13. Use p. as the abbreviation for page, and pp. as the abbreviation for pages.

14. Other material, as well as citations to references, should be placed in the footnotes, if the inclusion of it in the text would interfere with the consecutive and clear treatment of the subject. Explanatory material of a less important nature, for example, a reconciliation of conflicting authority, or an explanation of a statement, might well be placed in the footnotes. All material, however, of large importance should be included in the text because it is not the reader's custom to peruse foot-

notes; unimportant and irrelevant material should be entirely omitted from the thesis.

Plan 2: Body-of-the-page citations.—Instead of placing the citations in footnotes at the bottoms of the pages, and according to the plan described above, a few authors and publishers prefer to place them in parentheses or brackets and to run them in the body of the page and immediately after the statement or statements which they are meant to support or to acknowledge. Many authors, when using this plan, number the references in the bibliography, then in citing to one of these references they merely give its number in parentheses or brackets in the text at the place where needed, as (15). Other authors, when using the plan, place in the parentheses or brackets the number of the reference as it occurs in the bibliography and also the exact pages of the reference cited to, as (15, pp. 63-70), or (15, Bobbitt, *The Curriculum,* pp. 63-70).

If this plan of citing is followed, it is recommended that, for the convenience of the reader, fairly complete data on the reference be given, as (15, Bobbitt, *The Curriculum,* pp. 63-70); (19, Ashbaugh and Stevenson, *Educational Research Bulletin,* p. 34). The reader usually wants to know the name of the author and the work referred to and the giving of these data as recommended will save the time required to refer to the bibliography to secure this desired information.

This method of citing authorities, although not widely used at present, seems to be growing. It has the advantages of being more convenient for typists and printers engaged in typing or printing the manuscript and is more economical of space in the manuscript. When used too much, however, as is frequently the case in historical research, it tends to make the contents of the manuscript difficult to read.

THE USE OF QUOTATIONS

Plagiarism.—Credit for ideas or statements which he has taken from any publication, lecture, or other source should be given by the author. For an author not to give credit for borrowed ideas or statements is for him to be guilty of *plagiarism*—that is, literary piracy. Plagiarism is a species of dishonesty, and it is probably the greatest professional sin which an author can commit; in fact, to be found guilty of plagiarism is almost ruinous to an author. It should be noted that the stealing of another person's ideas is plagiarism the same as would be the stealing of the words, the symbols, or any other form of expression of those ideas.

Indirect quotations.—When another person's ideas are used, but not his exact words, that is an indirect quotation. Full credit must be given for indirect quotations the same as for direct quotations. Indirect quotations should *not* be enclosed in quotation marks.

Direct quotations.—When an author's exact words are used that is a direct quotation. Direct quotations should be enclosed in double quotation marks, and full credit should be given for them.[1] If the quotation is of some length, say, of more than four or five lines, it should be run in a separate paragraph, and should be typed in single-space lines. Short quotations, say, those under four lines in length need not be placed in separate paragraphs and need not be double-spaced; they must however, always be enclosed in double quotation marks, that is, " ". Quotations within a quotation should be enclosed in single quotation marks, that is, ' '.

---

[1] If, by such means as introducing the quotation and by single spacing the quotation, it is made obvious where the quotation begins and ends, it will not be necessary to enclose the quotation in quotation marks.

Care should be taken to reproduce exactly any matter which is quoted. Any corrections or remarks inserted by the person who quotes should be placed in square brackets [ ] and run at the proper place in the quotation. When for emphasis an author desires to *italicize* any part of a quotation, which is not italicized in the original, he should indicate that the italics are his; the following quotation from Plato illustrates how this matter may be handled:

> *Technical instruction and all teaching which aims only at money-making is vulgar* [the italics are the present author's] and does not deserve the name of education. True education aims solely at virtue, making the child yearn to be a good citizen, skilled to rule and to obey.

When for any reason a part of a sentence or paragraph of the quotation is omitted, ellipses, that is, periods . . . ., should be used to indicate the omission. The practice is to use four periods for an elision at the beginning, in the middle, or at the end of a sentence. When a whole paragraph or paragraphs is or are omitted, a full line of periods is usually inserted to indicate the omission; for example:

Ellipses

> The evidence for all cities goes to indicate a greater increase in the cost of buildings than is

> shown by the general index of the cost of building made up from the wages of workmen and the cost of building materials . . . . The school-building figures should therefore be compared with the general index numbers for building six months or a year later.
>
> . . . .
>
> These factors tending to increase costs have been offset . . . . by very considerable building economies which have been introduced. . . . [1]

Quoting oral discourse.—Wishing to use any material which he has secured from a lecture or through a personal conference, the student should submit his write-up of that material to the person quoted for his approval. This should be done in order that the person quoted may make sure that he is quoted correctly; for a writer not to follow this practice is not only likely to be a breach of confidence, but is likely to result in quoting the person inaccurately.

REVIEW QUESTIONS

1. Why should authorities and sources of data always be cited in scientific documents, and cited with meticulous care?

2. What are the two plans which various authors use in citing authors and sources of data? What are the relative merits of these two plans?

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[1] W. R. Burgess, *Trends of School Costs,* p. 104.

3. Using the plan of footnote citation, give a sample citation to a book; to a magazine article; to a bulletin; to a legal document; to an unpublished work.

4. What is the meaning of the term *ibid*? When may it be used?

5. What is the meaning of the abbreviation *op. cit.*? When may it be used?

6. What is the meaning of the abbreviation *loc. cit.* or *l. c.*? When may it be used?

7. Since there is no *best* method of citing, what principle should guide an author in selecting and using a given method?

8. What kinds of reference indexes should be used?

9. Mention some of the more important matters which the author should keep in mind in using footnote citations.

10. What is plagiarism? Is it plagiarism to take another person's ideas but not his words? Explain.

11. How should direct quotations be typed? How should corrections or changes in quotations be indicated? How may omissions in quotations be shown?

12. Why should material which is secured by the word-of-mouth method be submitted to its author for approval before it is used in a thesis or other scholarly treatise?

CHAPTER IX

THE PREPARATION AND DISCUSSION OF STATISTICAL TABLES

SUGGESTIONS ON PREPARING TABLES

Among the first steps which an author must take in analyzing and reporting statistical data is that of organizing the data into tables. In his preparation of tables an author should always keep in mind the interests of the reader. Although tables are made for the reader's reference, usually the reader will not need, or care, to peruse them. In spite of their infrequent use, they should be prepared in such a manner that if the reader should desire to peruse them they would be immediately clear. Many authors fail to obey these suggestions with the result that many statistical tables are as unintelligible as railroad time-tables. An excellent beginning on the work of interpreting any statistical data will have been made when the data have been properly organized in tables; generally speaking, tables will have been properly organized when they are *clear* and *accurate*. The following suggestions should be kept in mind in preparing tables:[1]

1. Numbering tables.—Each table should be given a number in order that the writer may more readily refer to it in the text, and in order that the reader may more easily locate it if he should desire to peruse it. Tables should be numbered consecutively throughout the manuscript. The practice is to use Roman numerals (I, II, III, etc.) in numbering tables. Space is saved by placing the table number on the same line with the table heading rather than above it; it is permissible, however, to place the table number above the table heading; but, be consistent throughout the manuscript in the use of one style.

2. Table headings.—Each table should have a heading or title which states succinctly the contents of the table. The title or heading should appear above the table, not below it. Avoid in the title or heading the use of superfluous words such as "table showing," for, obviously it is a *table*, and it *shows* something. For better appearance the title or heading should be centered above the table as in the following sample:

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[1] See pages 185 to 187 of this book for sample tables which illustrate the suggestions here given.

TABLE IV. THE DISTRIBUTION OF MARKS OF
EACH GROUP IN ENGLISH IN SCHOOL
GRADES 9 TO 12 INCLUSIVE

3. Continued tables.—When, because of lack of space on the previous page, a table must be continued on the next page, it should be set-up on the next page the same as on the previous page; the title, the column headings, and the line titles should be repeated in full and the word "continued," written within parentheses, should be placed between the number of the table and the title. A table, though, which can be shown on one page should not be continued on the next page. The following is a sample of a continued title:

TABLE VI. *(Continued)* SALARIES OF THE CHIEF
STATE SCHOOL OFFICIALS IN 1909,
AND IN 1928

4. Use of capitals in tables.—Be consistent in the use of capitals in table headings, column headings, and line titles. Regarding the use of capitals in the table heading, the most common practice is to write all letters of the words of the heading in CAPITAL LETTERS; another practice is to capitalize only the first letter of the important words of the title, that is, all words, except articles, conjunctions, and prepositions; still another practice is not to capitalize any words, except those which are always capitalized, such as the first word of the title, and all proper names. It will be observed that in the tables of this book all letters of the table headings are capitalized.

In column headings and in line titles, the usual practice is to capitalize only the first letter of the first word, except in the case of a proper noun, the first letter of which is always capitalized. The tables of this book follow the usual practice just mentioned.

5. Use of abbreviations in tables.—In table headings, column headings, and line titles, abbreviations should not be used unless space limitations make their use absolutely necessary. In fact, the best practice dictates that abbreviations should be avoided not only in tables but in the text of the manuscript as well; they should be avoided because there is a danger that the reader will not understand them. Any abbreviations which are used should be standard and well-known abbreviations; if there is a possibility that the meanings of the abbreviations will not be known to the reader, the meanings should be explained.

6. Use of periods in tables.—The tendency in practice is not to use periods at the close of table headings, column headings, and line titles, except at the end of a sentence which does not complete a heading or title. Some style books and manuals, however, particularly the *Style Manual of the Government Printing Office,* permit the use of periods in the instances just mentioned. Periods should not be used in any of the statistics of the table, except to separate dollars from cents and units from tenths.

7. Use of the dollar sign.—When financial data are exhibited in a column of a table the dollar sign should appear only before the first entry in the column and again before the total.

8. Use of the decimal point.—Whenever decimal points are used in the data of a column the data should be arranged in the column in such a way that the decimal points appear in vertical lines with one decimal point above the other. All decimals, dollar signs, and other concrete values should be aligned.

9. Footnotes to tables.—To avoid any possibility of confusing the reader, most writers prefer to indicate footnotes for tables by means of small letters, asterisks, daggers, etc., rather than by means of numerals; the use of numerals, however, is permissible. Whenever footnotes to a table are used they should appear immediately following the table and before the inclusion of any other matter. See page 107, Rule 5, of this book for further suggestions on footnotes for tables.

10. Omission of data in tables.—In case data are not available for a particular item in a table, the omission should be indicated either by dashes, — —, by dots . . ., or — and this is the preferable style—by leaving the space entirely vacant. An omission of data should not be indicated by a zero, 0, except when zero value is meant. Some authors insert index numbers in any blank spaces of the table and in the footnotes to the tables they indicate the reason for the data being missing.

11. Simple tables.—In most cases it is preferable to exhibit only one or two units of information in one table; any attempt to show several units of information tends to make a table confusing, particularly if the units of information are of very different kinds. In other words, a table, like any other piece of writing, should have unity.

12. Introducing tables.—It is helpful to the reader's understanding of a table if he is given a brief introduction to the table before the table appears in the text. The table should be run in the text as soon as possible after this introduction—on the same page if possible, and never later than the next one, two, or three pages. This introduction to the table may be given by explaining briefly the arrangement of the table, if the table is slightly complex, or by pointing out one or more particularly significant facts in the table. After the table has been presented, other particularly important data in it, and conclusions to be drawn from it, should be given; somehow the outstanding facts of the table should be made clear to the reader.

13. Referring to tables.—Since typists and printers can conveniently insert tables in the text at certain places only, it is advisable not to refer to tables with such remarks as "the above table" or "the following table;" instead, they should be referred to by number; this may be done by using such an expression as "the data of Table X show this to be the case."

14. Short *versus* long tables.—A short table is clearer than a long one; therefore, if it can be avoided,—and usually it can be—too much material should not be presented in one table; long tables are likely to be confusing. Frequently, original, gross, or raw data, which, if presented in the text, would likely clutter it, may well be presented in the Appendix. Original, gross, or raw data of minor import, which cannot be feasibly presented anywhere in the thesis, should probably be filed somewhere, for example, in the university library, in order that they will be available to other investigators who might desire to verify the investigation or to attack another angle of it; if such data are filed in the library or elsewhere, a statement to that effect should appear at an appropriate place in the thesis.

15. Summary *versus* distribution tables.—Both original, gross, or raw data as well as derivative data should be presented. Summary and distribution tables are generally necessary to summarize for the reader the original data of longer tables.

16. Summary columns in tables.—In addition to the absolute figures, tables frequently show ranges, percentages, ratios, totals, averages, etc.; such information is usually of great aid to the reader in interpreting the absolute figures. These data are usually placed in the bottom lines of the table or in the last columns on the right-hand side of the table.

17. Rules in tables.—Attention should be given to the kinds of dividing rules and to other mechanical aids which assist in making tables more clear. Double horizontal rules should appear at the top of the table; a single horizontal rule should be placed below the column headings; and a single horizontal rule (some style manuals suggest double rules here) should be placed at the bottom of the table. The rules just indicated should appear in every table, whether large or small. If the table doubles on itself, that is, has two parts, the two parts should be separated by double perpendicular lines.

The practice is not to separate the individual items of a table by horizontal rules; when rules for the individual items are used, it is usually in tables of more than two columns. For a sample of a ruled table see page 187 of this book, and for samples of unruled tables see pages 185 and 186.

18. Spacing of lines.—The practice is to single space between the individual items of tables.

19. Checking the data of tables.—Each item in a table should be checked for its accuracy. Any existing errors will more likely be discovered if this checking is done on a different day from that on which the original tabulations and computations were made.

20. Folded tables. — Tables which are too large to present on one page may be either divided up and presented on separate pages, or photostated and reduced to a one-page size, or folded. If a table is folded, care should be taken to fold it in such a manner that it can be readily opened for inspection. Because they cannot be handily used, folded tables should be avoided if possible.

DISCUSSION OF TABLES

What to discuss.—The neophyte research worker is usually perplexed over the problem of how to discuss the tables of his study. Deciding upon the matters which shall be mentioned about the tables is the big problem which presents itself to him. Confronted with this problem, a writer will be helped if he will keep in mind that the typical reader does not like to peruse tables, and, as a rule, he will not peruse them unless it is absolutely necessary; at best, tables make rather arid reading. The reader prefers to have the writer point out for him the significant facts which a table brings out, then to show the table for further detail and for reference; in other words, the reader likes to have his reading made easy and interesting.

The discussion of a table should point out the *significant* facts in the table; it should not be a rehash of insignificant facts. The significant facts are usually found in the "totals" columns, and the more important of those facts should be pointed out. The reader is usually interested in ranges, in averages, in percentages, and in other important comparisons; but, every table is a law unto itself, and discussion which would be pertinent for one table would not be pertinent for another.

Where to insert tables.—The discussion of a table should appear as close to the table as possible, because the reader may want to stop the reading of the discussion of the table for a moment and to glance at the table; if the table should appear several pages away from the discussion, the reader will be caused the inconvenience of thumbing several pages of the manuscript to find it, and frequently he will not put himself to that inconvenience. The suggestion which has just been made is applicable particularly to all summary tables and tables of similar importance; tables which present data of less importance may frequently be placed in the Appendix and the reader referred to them in the discussion of the table. When a table is not placed on the same page on which the discussion appears, or on the page which follows the discussion, a reference to the table should include not only the number of the table but the page on which the table appears.

THE USE OF NUMBERS

Note the following suggestions on the use of numbers whether in or out of statistical tables:

1. Be consistent throughout the manuscript in the use of numbers. Do not show numbers in figures in one paragraph and spell out similar numbers in another paragraph.

2. The usual practice is to use figures for showing all numbers taken from tabular material. Some style books, however, recommend that all numbers *under one hundred* be spelled

out and that figures be used for numbers *above one hundred.* In legal documents the practice is to spell out all numbers; that practice has been adopted to decrease the possibility of error.

3. Since in such instances a figure is apt to be confusing, a sentence should never begin with a figure; revise the sentence in order to avoid this, or, if that revision cannot be practicably made, express the number in words.

4. Spell out round numbers, such as *two thousand, one million.* As a general rule, numbers may be better expressed in hundreds than in thousands; thus, *sixty-five hundred.*

5. Spell out all numbers where the use of figures to express the numbers would be likely to cause confusion; for example: *three 14-year-old children; twenty-five 50-watt lamps.*

6. Fractions are usually spelled out; thus, *one-half, three-fourths.*

7. Commas should be used in figures to separate hundreds from thousands, thousands from millions, etc.; as in 11,567; 24,346,589. The comma may or may not be used in numbers of four figures; as, 5,435, or 5435; however, the tendency in practice is *not* to use the comma in numbers of four figures. The

comma, of course, is never used in dates; thus, 1930.

8. Do not confuse *percent* and *percentage.* Percent should be preceded by a number; for example: "The total population of the United States increased 300 percent in the last fifty years, but the percentage of increase of school population was 400." Most style books do not permit the use of the symbol "%"; be on the safe side by using the expression, "percent", instead of the symbol "%".

9. When numbers are expressed in figures particular care should be given to the proofreading and the checking of such figures. Although the experienced typist or compositor is extra careful with figures, it is much more easy to make mistakes in them than in words.

REVIEW QUESTIONS

1. Why should tables be numbered? In what order should they be numbered? Should they be numbered with Roman or with Arabic numerals?

2. Why should tables be given headings? To what standards should a good heading measure up? Should the heading appear above or below the table?

3. How should footnotes to tables be indicated? With reference to the table, where should footnotes to a table appear?

4. How should the omission of data in a table be indicated?

5. What is the advantage of introducing briefly

a table before the table is presented in the text? How may this introduction be given?

6. Why should the use of such expressions as "the above table" and "the following table" be avoided in writing? How should the author refer to a given table?

7. What discussion should be given for a table? With reference to a table, where should the discussion of the table appear?

8. How much material should be presented in one table?

9. Why should the data of all tables be checked for accuracy?

10. What further things should be kept in mind in designing tables in such a manner that the reader will be able to interpret them readily?

11. What are some of the more important matters which an author should keep in mind in using numbers in and out of tables?

12. The following table was handed in as part of a thesis by one of the present writer's careless graduate students. Indicate the mistakes, statistical, and otherwise, which the table has.

Salary Groups	Number of states
1,800 – $ 2,599	2 states
2,500 – 3,199	10 states
3,200 – 3,899	6 states
3,900 – 4,599	9 states
4,600 – 5,299	11 States
5,300 – 5,999	0 states
6,000 – 6,699	3 states
6,700 – 7,399	0 states
7,400 – 8,999[1]	7 states
Total	45
range	2500 – 8500

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[1] The highest salary is that of New York.

CHAPTER X

THE PREPARATION OF ILLUSTRATIONS

Value of Pictorial Presentation

Pictorial presentation of data frequently enables the reader to obtain a more comprehensive grasp of the data than could be secured in the same amount of time from a written description. Moreover, such presentation may oftentimes be used as either an alternative of or a supplement to a table. Still more, such presentation often permits the reader to make his own interpretations of the data, whereas in a written description the reader must largely accept the interpretations and conclusions of the author. Although an excellent picture may not be worth "ten thousand words," as a recent advertisement has said, it is undoubtedly worth many words.

Also, from the point of view of the author of the data, pictorial presentation has a large value. By such presentation the author makes himself more aware of the significance and meaning of his data. He often sees new meaning in his data and is led to make further discoveries, new explanations, and other conclusions.

SUGGESTIONS ON PREPARING ILLUSTRATIONS[1]

In his direction and supervision of the students who were preparing books, theses, term papers, and magazine articles, the present author has found that a few matters pertaining to the preparation of illustrations give trouble to almost every student. It has been deemed desirable, therefore, to give here a few suggestions on the handling of those matters which cause students the most trouble. Wishing more detailed help on the preparation of illustrations the reader will profit by referring to one or more of the many books on graphical method; some of the better known of those books are Willard C. Brinton's *Graphic Methods for Presenting Facts;* A. C. Haskell's *How to Make and Use Graphic Charts;* and W. C. Marshall's *Graphical Methods for Schools, Colleges, Statisticians, Engineers, and Executives.* At least one of these books will no doubt be found in the university library and will be readily available to the interested student. The following are our suggestions on preparing illustrations:

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[1] See pages 188 to 198 of this book for sample charts and graphs which illustrate the suggestions here given.

1. Numbering illustrations.—Each illustration should be given a number in order that it may be readily referred to in the text; an illustration can best be referred to by means of its number. Illustrations should be numbered consecutively throughout the manuscript. The practice is to use Arabic numerals, (1, 2, 3, etc.) in numbering illustrations. The word "Figure" may be abbreviated "Fig.," or written in full; but, be consistent in the use of one form.

2. Illustration title. — Each illustration should also have a title which states succinctly its contents. If possible, — and usually it is possible,— the title should be made so clear that other explanation of the illustration will not be needed. Avoid in the title the use of superfluous words such as "graph showing." The number and the title of an illustration may appear either above or below the illustration, but the practice is to place them below and that practice is here recommended. The following is a sample title for an illustration:

FIG. I. HOW THE NEW JERSEY TAX DOLLAR WAS SPENT IN 1923

3. Use of capitals in illustrations.—The usual practice is to write all letters of the words of the title in CAPITAL LETTERS; some other standard practice may, however, be used. For a statement of other standard practices see the suggestion previously given for table headings (suggestion 2, p. 117).

4. Referring to illustrations.—Since typists and printers can conveniently insert illustrations in the text at certain places only, it is advisable not to refer to illustrations with such remarks as "the above graph" or "the following chart;" instead, they should be referred to by number, for example: "For a clearer view of the data the reader is referred to Fig. 5."

with table

5. Simple illustrations.—In the interest of clarity the writer should avoid attempting to show too many things in one illustration; too many matters tend to clutter an illustration. An illustration largely defeats its purpose if the reader cannot grasp its contents at a glance.

6. Footnotes to illustrations.—To avoid confusion, most writers and publishers prefer to indicate footnotes for illustrations in the same way as for tables, namely, by small letters, asterisks, etc., rather than by numerals; however, the use of numerals is permissible. Footnotes for an illustration, as for a table, should appear, if used, immediately following the illustration.

7. **When to use illustrations.**—Illustrations should not be used merely for the sake of using them. If the data have already been clearly presented in tables, it would be superfluous to present them again by means of illustrations. Do not insult an intelligent reader by drawing too many "pictures" for him.

8. **Color of ink to use.**—Black ink should be used in making illustrations, particularly those which are to be photographed or blue-printed. By means of vertical hatching, horizontal hatching, and similar means, several types of data may be shown in one illustration. For the best results in making graphs the ink should be permitted to dry on the paper rather than to be blotted; blotting is likely to smear the ink and to give a less distinct impression.

9. **Reproducing illustrations.**—If the illustration is to be photographed or blue-printed, it should appear, together with its number and title, on a page by itself. Furthermore, if the

illustration is to be reproduced, all lines and other parts of it should be clear and distinct; indistinct lines do not photograph well.

NATIONAL "STANDARDS FOR GRAPHIC PRESENTATION"

At the invitation of the American Society of Mechanical Engineers, a number of national associations have appointed representatives to serve on a joint committee to formulate "Standards for Graphic Presentation." This committee has recently made a report which contains several excellent suggestions on graphic presentation; these suggestions are particularly pertinent to curve-making. The suggestions are more complete than the list just given, and for that reason, as well as because of their authoritative sponsorship, they are reproduced in full herewith:[1]

1. The general arrangement of a diagram should proceed from left to right.
2. Where possible, represent quantities by linear magnitude, as areas or volumes are more likely to be misinterpreted.
3. For a curve, the vertical scale, whenever

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[1] *Report of the Joint Committee of the American Society of Mechanical Engineers on Standards for Graphic Presentation.* (Copies of this report may be secured from the American Society of Mechanical Engineers, 29 West 39th Street, New York City).

practicable, should be so selected that the zero line will appear in the diagram.

4. If the zero line of the vertical scale will not normally appear in the curve diagram, the zero line should be shown by the use of a horizontal break in the diagram.

5. The zero lines of the scales for a curve should be sharply distinguished from the other coördinate lines.

6. For curves having a scale representing percentages, it is usually desirable to emphasize in some distinctive way the 100 percent line used as a basis of comparison.

7. When the scale of the diagram refers to dates, and the period represented is not a complete unit, it is better not to emphasize the first and last ordinates, since such a diagram does not represent the beginning and end of time.

8. When curves are drawn on logarithmic coördinates, the limiting lines of the diagram should each be of some power of 10 on the logarithmic scale.

9. It is advisable not to show any more coördinate lines than necessary to guide the eye in reading the diagram.

10. The curve lines of a diagram should be sharply distinguished from the ruling.

11. In curves representing a series of observations, it is advisable whenever possible, to indicate clearly on the diagram all the points representing the separate observations.

12. The horizontal scale for curves should usually read from left to right and the vertical scale from bottom to top.

13. Figures for the scale of a diagram should be placed at the left and at the bottom or along the respective axes.

14. It is often desirable to include in the diagram the numerical data or formulae represented.

15. If numerical data are not included in the diagram it is desirable to give the data in tabular form accompanying the diagram.

16. All lettering and all figures in a diagram should be placed so as to be easily read from the base as the bottom, or from the right-hand edge of the diagram as the bottom.

17. The title of a diagram should be made as clear and complete as possible. Sub-titles or descriptions should be added if necessary to insure clearness.

BRINTON'S RULES FOR GRAPHIC PRESENTATION

Willard C. Brinton, who is a recognized authority on graphic presentation, has devised a set of rules for the making of graphs, and this set is not limited to curve-making, as is the set which is reproduced immediately above. His rules are as follows:[1]

1. Avoid using areas or volumes when representing quantities. Presentations read from only one dimension are the least likely to be misinterpreted.

2. The general arrangement of a chart should proceed from left to right.

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[1] *Graphic Methods for Presenting Facts,* pp. 361-363. New York: The Engineering Magazine Company, 1914.

3. Figures for the horizontal scale should always be placed at the bottom of a chart. If needed, a scale may be placed at the top also.

4. Figures for the vertical scale should always be placed at the left of a chart. If needed, a scale may be placed at the right also.

5. Whenever possible, include in the chart the numerical data from which the chart was made.

6. If numerical data cannot be included in the chart, it is well to show the numerical data in tabular form accompanying the chart.

7. All lettering and all figures on a chart should be placed so as to be read from the base or from the right-hand edge of the chart.

8. A column of figures relating to dates should be arranged with the earliest date at the top.

9. Separate columns of figures, with each column relating to a different date, should be arranged to show the column for the earliest date at the left.

10. When charts are colored, the color green should be used to indicate features which are desirable or which are commended, and red for features which are undesirable or criticized adversely.

11. For most charts, and for all curves, the independent variable should be shown in the horizontal direction.

12. As a general rule, the horizontal scale for curves should read from left to right and the vertical scale from bottom to top.

13. For curves drawn on arithmetically ruled paper, the vertical scale, whenever possible, should be so selected that the zero line will be shown on the chart.

14. The zero line of the vertical scale for a curve should be a much broader line than the average coördinate lines.

15. If the zero line of the vertical scale cannot be shown at the bottom of a curve chart, the bottom line should be a slightly wavy line indicating that the field has been broken off and does not reach the zero.

16. When curves are drawn on logarithmically ruled paper, the bottom line and the top line of the chart should each be at some power of ten on the vertical scale.

17. When a scale of a curve chart refers to percentages, the line at 100 percent should be a broad line of the same width as a zero line.

18. If the horizontal scale for a curve begins at zero, the vertical line at zero (usually the left-hand edge of the field) should be a broad line.

19. When the horizontal scale expresses time, the lines at the left-hand and the right-hand edges of a curve chart should not be made heavy, since a chart cannot be made to include the beginning or the end of time.

20. When curves are to be printed, do not show any more coördinate lines than necessary for the data and to guide the eye. Lines ¼ inch apart are sufficient to guide the eye.

21. Make curves with much broader lines than the coördinate ruling so that the curves may be clearly distinguished from the background.

22. Whenever possible have a vertical line of the coördinate ruling for each point plotted on a curve, so that the vertical lines may show the frequency of the data observations.

23. If there are not too many curves drawn in one field it is desirable to show at the top of the chart the figures representing the value of each point plotted in a curve.

24. When figures are given at the top of a chart for each point in a curve, have the figures added if possible to show yearly totals or other totals which may be useful in reading.

25. Make the title of a chart so complete and so clear that misinterpretation will be impossible.

BRINTON'S CHECKING LIST FOR GRAPHS

Willard C. Brinton has also formulated a series of questions which the writer may use in checking and editing his graphs and charts. These questions are so helpful that the more pertinent of them are reproduced herewith:[1]

1. Are the data of chart correct?
2. Has the best method been used for showing the data?
3. Are the proportions of the chart the best possible to show the data?
4. When the chart is reduced in size will the proportions be those best suited to the space in which it must be printed?
5. Are the proportions such that there will be sufficient space for the title of the chart when the chart has been reduced to final printing size?
6. Are all scales in place?
7. Have the scales been selected and placed in the best possible manner?
8. Are the points accurately plotted?
9. Are the numerical figures for the data shown as a portion of the chart?
10. Have the figures for the data been copied correctly?
11. Can the figures for the data be added and the total shown?

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[1] *Graphic Methods for Presenting Facts,* pp. 360-361.

12. Are all dates accurately shown?

13. Is the zero of the vertical scale shown on the chart?

14. Are all zero lines and the 100 percent lines made broad enough?

15. Are all lines on the chart broad enough to stand the reduction to the size in printing?

16. Does lettering appear large enough and black enough when seen under a reducing glass in the size which will be used for printing?

17. Is all the lettering placed on the chart in the proper directions for reading?

18. Is crosshatching well made with lines evenly spaced?

. . . .

22. Are dimension lines used wherever advantageous?

23. Is a key or legend necessary?

24. Does the key or legend correspond with the drawing?

25. Is there a complete title, clear and concise?

26. Is the drafting work of good quality?

27. Have all pencil lines which might show in the engraving been erased?

28. Is there any portion of the illustration which should be cropped off to save space?

29. Are the instructions for the final size of the plate so given that the engraver cannot make a mistake?

30. Is the chart in every way ready to mark O. K.?

BLUE-PRINTING OF ILLUSTRATIONS

If only a few copies of an illustration are desired, blue-printing is generally the cheapest and the most satisfactory way of securing them. Onion-skin paper, either glazed or unglazed, may be used for making the copy; however, since erasures cannot be easily made on onion-skin paper, a light-weight, high-grade, white, bond paper is preferred; the latter kind of paper prints perfectly, permits erasures, and does not crack with age; a type of paper similar, or closely similar, to that used in the running text will usually suffice.

REVIEW QUESTIONS

1. Discuss the value of pictorial presentation of data. In general, when should such presentation be used?

2. Why should illustrations be numbered? In what order should they be numbered? Should they be numbered with Roman or with Arabic numerals?

3. Why should each illustration be given a title? Should the title appear above or below the illustration? What further criteria should the title meet?

4. How should footnotes to illustrations be indicated? With reference to the illustration, where should footnotes to an illustration appear?

5. What is the advantage of briefly introducing an illustration before running the illustration?

6. What discussion should there be of an illustration? With reference to the illustration, where should the discussion of the illustration appear?

7. Examine the several types of graphs on pages 188 to 198 of this book and select the best type to present pictorially a set of data of your own choosing.

CHAPTER XI

MISCELLANEOUS SUGGESTIONS

PREPARATION OF A TABLE OF CONTENTS

In order that any part of it may be more easily referred to by the reader the thesis should have a Table of Contents containing the captions of at least the main divisions of the manuscript and the page number of the manuscript on which each main division begins. The Table of Contents should be typed on a page or pages by itself, and it may be analyzed much or little, depending on which plan the author thinks will be most helpful to the reader; if the thesis has an Index, the Table of Contents does not need to be as much analyzed as it needs to be in case there is no Index.[1] (See the Table of Contents, page x of this book, for a sample of an unanalyzed Table of Contents; and see page 178 for a sample of an analyzed Table of Contents).

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[1] If the thesis can be made more useful to the reader by an Index it should have one. If it is published in book, bulletin, or monograph form an Index is particularly advisable; for an unpublished thesis, an Index is usually not necessary.

The ranks of the headings of the various divisions of the manuscript should be indicated in the Table of Contents by graded indentations. The main headings, that is, the chapter headings, should be begun flush with the left-hand side of the page. The subheadings of the main headings should be indented a few spaces, and subdivisions of the subheadings should be indented still a few more spaces. In setting up a Table of Contents the following outline will suggest an appropriate numbering, order, and indentation for a series of headings and subheadings:

I. ....
A. ....
1. ....
a). ....
(1). ....
(a). ....
i). ....
ii). ....
(b). ....
(2). ....
b). ....
2. ....
B. ....
II. ....

PREPARATION OF A LIST OF TABLES

A List of Tables should be prepared for the thesis, particularly if there are several tables, for example, more than three or four. The list should be made up by reproducing for each table the number of the table, the heading of the table, and the page number of the manuscript on which the table appears; let it be emphasized that the information which has just been mentioned as being necessary for each table must correspond exactly with the information for the table as it appears in the manuscript. The List of Tables should appear on a separate page or pages. It can be easily made up by the stenographer, provided she is given the necessary direction, after the manuscript has been typed in final form. (See page 179 of this book for a sample List of Tables).

PREPARATION OF A LIST OF ILLUSTRATIONS

The comments which have just been made regarding the preparation of a List of Tables are also pertinent to the preparation of a List of Illustrations. (See page 180 of this book for a sample List of Illustrations).

ACKNOWLEDGMENTS

Frequently the student will desire to acknowledge any help which has been given him in the preparation of the thesis. If acknowledgments are made, they should be expressed with simplicity and tact. Effusive acknowledgments may be embarrassing to persons to whom they are meant to do honor; however, mention can and should be made in an appropriate way of the suggestions, criticisms, or other forms of assistance which have been received in the investigation. When acknowledgments are expressed, they are usually placed on a separate page and usually appear immediately following either the Table of Contents or the List of Illustrations; many authors, on the other hand, make their acknowledgments in a paragraph, usually the last paragraph, of the Preface or Introduction. (For an illustration of how acknowledgments may be expressed, see page ix of this book).

ORDER OF THE PARTS OF THE THESIS

The order of the parts of the thesis should be approximately as follows:

1. Title page.
2. Table of Contents.

3. List of Tables, if several tables (for example, three or more) are used.

4. List of Illustrations, if several illustrations (for example, three or more) are used.

5. Body or text of the thesis.

6. Bibliography, provided there is one on the subject; some problems, of course, have little or no literature, and in such cases there will be little or no bibliography. A few writers place the bibliography before the body or text of the thesis, and other writers place the appropriate references at the close of the chapters to which they apply most pertinently.

7. Appendix, if any is used. If the material in the appendix is very dissimilar, it may be classified into several appendices under the headings of Appendix A, Appendix B, etc.

8. Index. If there is a well-analyzed Table of Contents, an Index is not necessary, particularly in a short thesis.

LENGTH OF THE THESIS

Students frequently inquire of their professors concerning faculty expectations or university requirements regarding the length of the thesis. In no university, so far as we have been able to ascertain, is the length of the thesis specified. In general, the length will be determined by the nature of the problem. Some theses of only a few pages make worth-while contributions and are acceptable, whereas other theses, in order to treat their problems satisfactorily, must run up to several hundred pages in length. Quality instead of quantity is the desideratum. Padding a manuscript can never be justified, because an inflated manuscript wastes the reader's time by requiring him to peruse unimportant material; an inflated manuscript violates the principle of unity. Clearness and completeness of treatment being equal, the shorter the manuscript is, the better the manuscript. Just as "brevity is the soul of wit," so brevity is an important criterion to keep in mind in preparing any written document. Most manuscripts could be improved if their authors would take the time to go through them and eliminate every superfluous word, sentence, paragraph, figure, table, and illustration.

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AMOUNT OF TIME TO SPEND ON THE THESIS

How much time is expected to be spent on the thesis is another question which is frequently asked by students. So far as we have been able to ascertain, the amount of time to be spent on the thesis is not specified in any university. The amount of time could not be justly specified, for some problems selected for theses are much more difficult and time consuming than others; furthermore, some students work much more rapidly and efficiently than others. All that can be said on the question of the amount of time to be spent is that students are expected to do well the work which they undertake however great the time that may be required to do it; slipshod work is never excusable.

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Students should be stimulated to do the very best work of which they are capable by the thought that their merit as scholars, present and potential, is judged very largely on the basis of the worth of the thesis produced. A poor thesis is neither to the credit of the student who writes it nor does it add to the reputation of the university which accepts it. An excellent thesis, on the contrary, increases the prestige of its author and also the standing of the university which accepts it. Although the student may not always be aware of the fact, it is nevertheless true that the university does the student a real favor when it rejects a poor thesis; moreover, by practicing such discrimi-

ways put forth
in best work
n will be judged
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nation the university enhances its reputation as a center for graduate study.

WHEN TO SUBMIT THE THESIS

All universities require that the thesis be submitted in final typed form at a certain date previous to the commencement or convocation at which the student expects to receive his degree; however, it should be handed in as long as possible before that date in order that sufficient time will be had for professors to criticize it and for the student to make any corrections which are necessary. It is an unusual thesis which does not need considerable revision after it has been first submitted, and ample time should be reserved for this revision. Some theses have to be entirely rewritten; in fact, some of them have to be rewritten several times before they are acceptable.

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MEETING OTHER REQUIREMENTS FOR THE THESIS

To avoid any possibility of delay in securing his degree the student should make sure that all of the university requirements regarding the thesis are met. These requirements generally have to do with such matters as getting the subject of the thesis approved by the proper authorities at a certain date before the student expects to receive his degree; the form of the title page of the thesis; the number of copies of the thesis to be presented to the university; the typing; the publication, if required; the kind of paper to be used in the typing; and the university fees to be paid.

TYPING THE THESIS

At various places in this book several suggestions regarding the typing of the thesis have been made, but the following further suggestions remain to be made:

1. **Using one side of paper.**—Only one side of the paper should be used in typing.

2. **Numbering the pages.**—The pages may be numbered consecutively with Arabic numerals in either the upper middles of the pages or the upper right-hand corners of them. The usual practice is to place the page number in the upper middle of the page and slightly above the first line; the number should appear about an inch below the top of the sheet of paper. If desired, the introductory pages, that is, the Title Page, the Table of Contents, the List of Tables, and the List of Illustrations may be numbered with Roman numerals, ac-

cording to the practice followed in many books; if that style is followed, then the first text-page should begin the numbering with Arabic numerals.

3. **Margins.**—Ample and uniform margins should be left at all four sides of each page. To permit of binding, a margin of approximately one and one-half inches should be provided at the left-hand side of each page; a margin of about one inch should be left at the other three sides. Similar margins should be left for all tables and illustrations. To permit editorial marking, manuscripts which are being prepared for printer's copy should leave margins of about two inches at the right and left of each page.

4. **Divisions of words.**—All unnecessary divisions of words at the ends of lines should be avoided. It is not good form to divide short words (for example, those of four letters or less). Words slightly longer (say, those of five or six letters) should be divided only when it is absolutely necessary. When there is not enough space at the end of a line to write whole a short word it should be so written at the beginning of the next line. The division of the

last word on the last line of a page should be avoided.

5. Spacing.—Double spacing should be used throughout the manuscript, except in such cases as footnotes, tabular data, and direct quotations of some length, which should be single spaced. Direct quotations of some length (for example, those of more than two or three lines) should be single spaced, and should have the lines shortened about an inch. All direct quotations should be placed in quotation marks. (For further suggestions on the handling of quotations, see pages 111 to 114 of this book).

6. Selecting a typist.—The student should make sure that the typist to whom the thesis is given is efficient; it is a common observation that some typists are much more efficient than others. If the student is not absolutely certain of the efficiency of a typist, it is a good plan to ask professors or other competent persons to make recommendations. The student should make sure also that the manuscript will be typed when it is wanted; since efficient typists tend to be unusually busy just before commencement season, an efficient typist should be engaged as early as possible.

7. **Proofreading.**—After the thesis has been typed it should be carefully proofread by its author and all needed corrections made; usually any needed corrections will be only of typographical errors and the making of them will not necessitate the retyping of a whole page. In marking the manuscript for corrections it is recommended that a standard set of proofreader's marks (see pages 168 and 169 of this book for a standard set) be used; the student's own system of marks might be perfectly clear to him, but it might not be clear to a typist or compositor.

8. **Neatness in first-draft.**—When the thesis is first handed in for professorial criticisms it should be either typewritten or in perfectly clear handwriting, for no reader likes to spend his time in "deciphering" a manuscript. A slovenly written manuscript is likely to prejudice an author's case. When a student releases a manuscript, the inference is that he is willing to have the manuscript represent him; indeed, the manuscript *does represent* the student whether he is conscious of it or not.

9. **Kind of paper.**—Most universities require that the thesis be typed on a certain grade of

paper, therefore, the student should make inquiry concerning this requirement. In the absence of a requirement on the matter a good grade of white paper is recommended. Paper of a standard size (8½ by 11, or 8 by 10½ inches) should be used; the 8½ by 11-inch sheet is the size which most universities require.

10. Number of typewritten copies.—The number of copies of the manuscript to be secured will be determined by the requirements of the university and the desires of the student. Universities usually require from one to three copies to be deposited in the university library. Usually from four to five copies can be made at one typing, and there is not much extra charge for the carbon copies. The typical student will want to secure enough copies not only to meet the requirements of the university but to be able to retain one copy for his own use.

REVIEW QUESTIONS

1. Why should the thesis have a Table of Contents? How should the Table of Contents be made up?
2. Why should there be a List of Tables? How should it be made up?

3. Why should there be a List of Illustrations? How should it be made up?

4. If acknowledgments are made, what standards should they meet? Why are acknowledgments sometimes embarrassing to persons to whom they are meant to do honor?

5. What should be the order of the parts of the completed thesis?

6. How long should the thesis be? How much time should be spent on it? When should it be submitted for faculty criticism?

7. What are some of the more important things which should be kept in mind in typing the thesis? Discuss in particular the following matters: The qualifications of the typist; the kind of paper to be used; the numbering of the pages; the margins to be left; the spacing; and proofreading.

CHAPTER XII

SUGGESTIONS ON PUBLICATION

WHY THESES SHOULD BE PUBLISHED

If theses are to be of much service to the public they must be published in order that the public may have ready access to them; the two, three, or four typewritten copies, which it is customary to deposit in the university archives, can never be read by a large number of persons. Moreover, an unread thesis—although it may be ever so excellent—will not do much toward building up the author's reputation. Heretofore entirely too many excellent theses have been written, then buried in manuscript form in the archives of universities never to be resurrected; of course, this blissful and eternal repose is the proper disposition of all theses of an inferior type, and, unfortunately, some of that type are still being written and accepted.

It is urged, therefore, that the possibility of publishing the thesis in whole or in part, after it has met the requirements for the degree, be kept in mind.[1] Keeping in mind the possibility of publishing the thesis will tend to help bring out the author's best efforts on it, for no author worth his salt wants a piece of poor workmanship to be published and thus be made available to his fellows; when a work has been printed and distributed it cannot easily be recalled, and an ambitious author will not forget this fact.

There are many editors and publishers of magazines, and of government and other publications, who are frequently glad to publish, in whole or in part, scholarly written theses; and often they will publish them without any cost to the author. In fact, some theses are so excellent, and have so wide an appeal, that publishers are glad to publish and to market them on a royalty basis.

GETTING THE COPY IN GOOD FORM

Care should be taken by the author to see that the "copy" (that is, the written material which is put into type) is exactly correct in every particular before it goes to the printer or compositor. The author should say just what he intends to say and he should say it in a meticulously correct way. The necessity for taking such pains will be evident when it is noted that changes in the type, whether in the galley proof or the page proof, are expensive to make and are usually charged in whole or in part to the author. Errors in the page proof should be particularly guarded against because the making of only a small change, for example, the addition or the deletion of one word, in the page proof will often require a resetting of the type for not only the remainder of that page but for the next several succeeding pages as well.

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[1] Regarding the publication of the Doctor's thesis, most universities require that it be published in toto or in abstract form, the expense for same being borne by the student; the tendency in university requirements is to require only the publication of an *abstract* of the Doctor's thesis. Regarding the publication of the Master's thesis, a very few universities require the publication of an abstract of the thesis; so far as the writer has been able to ascertain, no university requires the publication of the Master's thesis in toto.

If the manuscript is to be published in whole as a book, a bulletin, or a monograph, every part of it should be written out before it is sent to the publisher. The "preliminary pages" (that is, such pages as the short title,[1] the copyright page, the title page, the Preface, the Table of Contents, the List of Tables, and the List of Illustrations) are frequently overlooked by the author; these, however, are an integral and necessary part of the work, and someone will have to prepare the copy for them; that "someone" should be the author. It should be kept in mind that it is not the duty of the publisher to write any part of the copy for the author. The more complete the manuscript is, the better will be its chances for acceptance.

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[1] This title is variously referred to as the short title, half title, or bastard title. It is usually a repetition of the name of the book and appears, if it appears, on the first printed page in the book.

Frequently, the author of the thesis will want to publish his material serially in magazines. If such should be the case, he should prepare the copy for each article just as he wishes it to be printed. Each article of a series should expose a specific phase or phases of the investigation, and for its understanding it should not be necessary for the reader to peruse a previous or succeeding article or articles. In preparing his manuscript for a particular magazine the author should follow the style of publication of that magazine; an examination of a number of that magazine will give the author an acquaintance with the style of publication to follow.

SEEKING A PUBLISHER

The manuscript should be submitted to a publisher—a reputable publisher is meant of course—who would be likely to accept it for publication. Frequently a manuscript is rejected by a given publisher not because it lacks merit, but because it is not *available* to that publisher. The author should use discrimination in seeking a publisher; a novel, for example, would likely be returned as *unavailable,* if it were sent to a publisher of religious works; likewise a manuscript would likely be unavailable to a given publisher if that publisher already had a publication, particularly a recent and excellent publication, covering the subject of the submitted manuscript.

submit to
journal that
already
cepted an
covering
same topic

When the manuscript—particularly a manuscript for a book, a bulletin, or a monograph—is submitted to a publisher, a letter should accompany it, telling succinctly the nature and the scope of the manuscript. The letter should not be an effusive recommendation of the manuscript, because publishers like to be permitted to determine for themselves—in fact, they *will* thus determine—the merits of manuscripts; with a reputable and discriminating publisher a manuscript stands or falls on its merit.

SPECIFYING THE KIND AND SIZE OF TYPE

Kind of type.—The publisher usually assumes responsibility for specifying the kinds of type to be used in setting up the manuscript, but occasionally the author will need or want to do this, particularly if the manuscript is published in book, monograph, or bulletin form. Complete specifications for the manuscript include an indication of the styles and the sizes of type for the body of the text, for the various kinds of headings, for the tables, for the quotations, for the references, etc.; they also include a mention of such things as the desired kind of paper, the size of page, and the kind of binding. The following are the kinds of type in general use at present:

1. *Roman.*—The Roman is the style of type in ordinary use; this book, for example, is printed in Roman type. There are three kinds of Roman type: (a) CAPITALS (caps.), which may be indicated to the printer by drawing three straight lines under the word or letter to be capitalized; (b) SMALL CAPS (s. c.), which may be indicated by drawing two straight lines under the word or letter to

be capitalized; (c) lower-case letters (l. c.), that is, ordinary small letters.

2. *Italic.*—To make a certain figure, word, phrase, or sentence stand out, *italic* type may be used. Such type may be indicated by drawing one straight line under the part to be italicized. It should be remembered that a too frequent use of italics in the text tends to lessen the force of such type. For suggestions on the italicizing of a quotation the interested reader is referred to page 113 of this book.

3. *Bold-face.*—To indicate that **bold-face** type is wanted, underscore with a wavy line the part or parts to be **bold-faced.** This style of type is seldom used in the body of the text, italics being usually preferred to make a given part stand out.

Size of type.—The following are illustrations of the sizes of type which are most frequently used in periodical articles, monographs, bulletins, books, and similar works:

This line is set in 5-point type.
This line is set in 6-point type.
This line is set in 7-point type.
This line is set in 8-point type.
This line is set in 9-point type.
This line is set in 10-point type.
This line is set in 11-point type.
This line is set in 12-point type.

Of course, there are larger sizes of types, but these are seldom used, except in headings and titles.

PROOFREADING

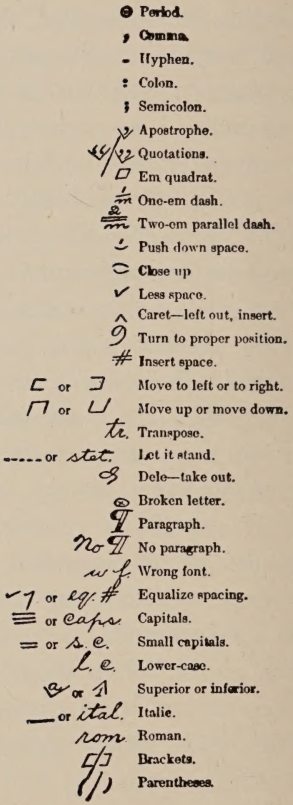
How to proofread.—After the manuscript has been typewritten it should be carefully proofread by its author and all needed corrections made. It should also be proofread after it has been set in printer's type. Corrections to be made in printer's proof should be indicated by means of a standard set of proofreader's marks such as that shown on page 168 of this book. Corrections should be clearly and neatly indicated, and preferably they should be written in ink. In order that all needed corrections may be seen by the typist or compositor, they should preferably be indicated opposite the lines in which the errors occur; any correction that is indicated between the lines should be placed above the line to which it applies so that it will be seen by the typist or printer before he or she reaches the part concerned.

If possible, two persons should work together in doing the proofreading; one of these should read aloud from the copy or manuscript while the other (preferably the author) follows the proof and makes all necessary corrections. The person who reads the copy should call attention to every paragraph, punctuation mark, capitalized word, italicized word, etc. It is recommended that both the galley proof and the page proof be read twice, at least; one of these readings should be with the aid of the "copy," and in which two persons will have to assist, while the other reading may be done by the author alone without the aid of the copy except for occasional reference.

It should be noted that changes in the copy, after it has been set in type, are very expensive to make, and most publishers charge such changes partly or wholly to the author; in other words, for an author to change his mind costs money. Genuine errors, though, should be corrected even though they may be expensive to correct. The printer or compositor will, of course, set up the manuscript just as it comes to him; therefore, the author should make sure that the manuscript is correct in every detail before it goes to the printer or compositor.

If the manuscript is published in book, bulletin, or monograph form, the typical publisher will send proof to the author without the author requesting it; however, the publisher of the typical magazine will not send proof unless it is requested; therefore, when a manuscript is submitted to a magazine, if the author desires to read the proof of his manuscript, he should so inform the publisher. The importance of an author reading his proof is well illustrated by an unfortunate experience of the present author; he once published a magazine article in which the printer substituted the word "medium" for the word "median" which appeared in the author's copy; if the author had requested proof of the article he would no doubt have caught that unfortunate error. It should be remarked that the error was made by an ignorant or careless printer, but some readers may have credited the error to an ignorant or careless *author.* It is better for an author to be safe than to be sorry; his reputation is in his own keeping and the world holds him responsible for the work of his agents.

Symbols for corrections, and proofreader's marks.—The following generally accepted symbols and marks are taken from the *Style Manual of the Government Printing Office.* See page 169 of this book for a sample page illustrating the use of these symbols and marks.



⊙	Period.
,	Comma.
-	Hyphen.
:	Colon.
;	Semicolon.
’∨	Apostrophe.
“∨ / ”∨	Quotations.
□	Em quadrat.
1/m	One-em dash.
2/m	Two-em parallel dash.
⌣	Push down space.
⊂	Close up
✓	Less space.
∧	Caret—left out, insert.
9	Turn to proper position.
#	Insert space.
[or]	Move to left or to right.
⊓ or ⊔	Move up or move down.
tr.	Transpose.
..... or stet.	Let it stand.
δ	Dele—take out.
⊗	Broken letter.
¶	Paragraph.
No ¶	No paragraph.
w. f.	Wrong font.
✓ or eq. #	Equalize spacing.
≡ or caps.	Capitals.
= or s. c.	Small capitals.
l. c.	Lower-case.
∨ or ∧	Superior or inferior.
___ or ital.	Italic.
rom.	Roman.
[/]	Brackets.
(/)	Parentheses.

Sample corrected page.— The following page is designed to illustrate the use of the symbols and marks which are mentioned above.[1]

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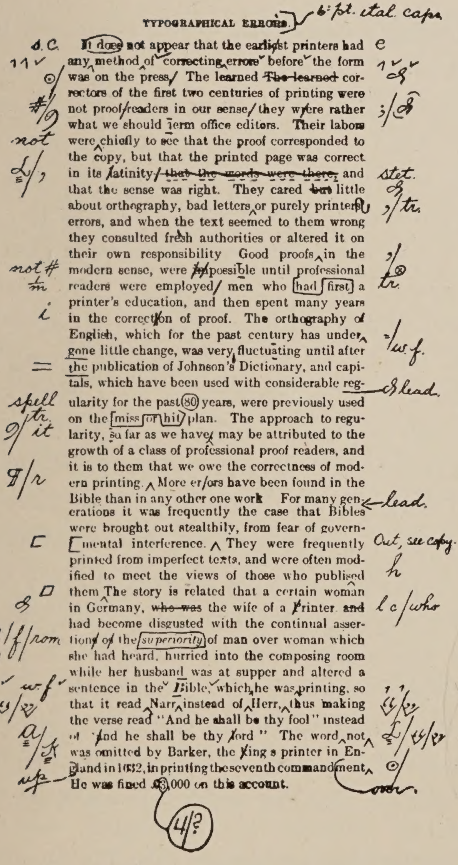
[1] The page is taken from the *Style Manual of the Government Printing Office,* p. 3.



TYPOGRAPHICAL ERRORS. 6 pt. ital. caps

s. C. It does not appear that the earliest printers had e
1 1 ✓ any method of correcting errors before the form 1 ✓ ✓
⊙/ was on the press/ The learned ~~The learned~~ cor- ꝺ
rectors of the first two centuries of printing were /
#/ not proof/readers in our sense/ they were rather ;/ꝺ
9 what we should term office editors. Their labors /
not were chiefly to see that the proof corresponded to
L/ the copy, but that the printed page was correct
, in its latinity/ ~~that the words were there,~~ and stet.
that the sense was right. They cared ~~but~~ little ꝺ
about orthography, bad letters or purely printers ,/tr.
errors, and when the text seemed to them wrong /
they consulted fresh authorities or altered it on
their own responsibility Good proofs in the ,/
not # modern sense, were impossible until professional /⊗
m readers were employed/ men who had first a tr.
printer's education, and then spent many years
i in the correction of proof. The orthography of
English, which for the past century has under =/
gone little change, was very fluctuating until after w.f.
= the publication of Johnson's Dictionary, and capi-
tals, which have been used with considerable reg- ꝺ lead.
spell ularity for the past (80) years, were previously used
tr. on the miss or hit plan. The approach to regu-
9/ it larity, so far as we have may be attributed to the
growth of a class of professional proof readers, and
¶/r it is to them that we owe the correctness of mod-
ern printing. More er/ors have been found in the
Bible than in any other one work For many gen- ← lead.
erations it was frequently the case that Bibles
were brought out stealthily, from fear of govern-
[[mental interference. They were frequently Out, see copy.
printed from imperfect texts, and were often mod- /
ified to meet the views of those who publised h
□ them The story is related that a certain woman
ꝺ in Germany, ~~who was~~ the wife of a Printer ~~and~~ l c/who
had become disgusted with the continual asser- /
ꝺ/f/rom tions of the *superiority* of man over woman which
she had heard, hurried into the composing room
while her husband was at supper and altered a
✓ w.f. ✓ sentence in the Bible, which he was printing, so 1 1
“/” that it read Narr instead of Herr, thus making “/”
the verse read "And he shall be thy fool" instead
a/ of "And he shall be thy Lord" The word not L/“/”
/k was omitted by Barker, the King s printer in En- /
gland in 1632, in printing the seventh commandment ⊙/
up — He was fined £3,000 on this account. over.

4/?

Is this true?

COPYRIGHTS

Securing a copyright.—The copyright law of the United States makes provision for the copyrighting of the following types of materials:[1] Books, including composite and cyclopædic works, directories, gazetteers, and other compilations; periodicals, including newspapers; lectures, sermons, addresses (prepared for oral delivery); dramatic or dramatic-musical compositions; musical compositions; maps, works of art; models or designs for works of art; reproductions of a work of art; drawings or plastic works of a scientific or technical character; photographs; prints and pictorial illustrations; motion-picture photoplays; and motion pictures other than photoplays.

A copyright may be secured on any subject matter which is listed in one of the classifications just mentioned, provided that a previous copyright, which is still in force, has not been issued on that particular subject matter. Application for a claim to copyright certain subject matter may be made by applying to the

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[1] This classification is taken from *The Copyright Law of the United States of America*, p. 9. Copyright Office Bulletin No. 14. Washington: Government Printing Office, Library Branch, 1926.

Register of Copyrights, Library of Congress, Washington, D.C. A certificate of copyright is issued to the applicant, provided the provisions of the copyright law are met in every detail. In general, to have copyrighted any subject matter which is reproduced for sale, it is necessary to apply for a claim to copyright, to pay a registration fee of two dollars, to run the notice of copyright at a designated place on each copy of the article, and to deposit two published copies of the work with the Register of Copyrights. Wishing the complete details of the copyright law of the United States, the author should consult an eighty-page bulletin which he will probably find in the library of his university, or which he may procure free by addressing the Register of Copyrights; the citation for this bulletin is given in the footnote on the preceding page of this book.

The usual practice is for the publisher to procure the copyright in his name; but, the author may procure it in his own name if he desires. The copyright may be transferred from one proprietor to another by going through essentially the same routine as was required in securing the copyright originally.

Reproducing copyrighted material.—Wishing to reproduce any material which is copyrighted the author should write to the proprietor of the copyright to secure permission. In fact, he *must* secure such permission because it is a violation of copyright law to reproduce, in whole or in part, copyrighted material before securing permission to reproduce it; damages may be secured from violators of copyright law and a large amount of other expense and trouble may result. Most authors and publishers who hold copyrights are quite generous in giving permission to other persons to use minor quotations from their material, provided that complete credit is given to the publication from which the quotation is taken, to the author, and to the proprietor of the copyright. The footnote at the bottom of this page is an illustration of how credit may be given for a quotation taken from copyrighted material[1].

When writing an author or a publisher for permission to quote from copyrighted material, the author should mention the exact sentences, paragraphs, illustrations, or other material which he wishes to quote; moreover, he should mention the name of the work and the identifying pages. He should also say that he will give full credit for the quotation to the author, the work, and the proprietor of the copyright. It cannot be too strongly urged that this permission to use copyrighted material be secured before the quotation is set in type, because an occasional proprietor of a copyright will refuse permission to reproduce his material and such refusal would mean that the expense entailed in setting the quotation in type would be wasted; in a recent publication of the present author, there was one refusal to quote copyrighted material in approximately twenty requests. For future reference, should they be needed, it is a good plan to file permanently all permits for quoting from copyrighted material; these permits should be filed in the keeping of the proprietor of the copyright, which in most instances will be the publisher.

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[1] Ward G. Reeder, *The Business Administration of a School System,* p. 43. Copyright, Ginn and Company, 1929.

REVIEW QUESTIONS

1. Why should theses be published if at all possible? When he is preparing the thesis, what advantages would there be in the student keeping in mind the possibility of publishing the thesis?

2. Why should the "copy" be in excellent shape before it goes to the prospective publisher or to *the* publisher?

3. How should an author go about seeking a publisher?

4. Why must the proofreading be carefully done? What symbols for corrections and proofreaders' marks should be used?

5. How may a copyright be procured? What advantages are there in securing a copyright for a publication?

6. Why should permission be secured before taking anything from copyrighted material?

APPENDIX

SAMPLES OF PAGES OF THESES

(*Sample title page of a thesis*).

A COMPARISON OF THE LEGAL STATUS OF SCHOOL BONDS IN THE FORTY-EIGHT STATES

A Thesis Presented for the
Degree of Master of Arts

By

RALPH C. WATERS, B. SC. IN ED.

THE OHIO STATE UNIVERSITY
1923

Approved by:

____

(*Sample analytical table of contents*).

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(*Sample page showing topic headings, etc.*).

THE CHIEF STATE SCHOOL OFFICIAL IN THE UNITED STATES

INTRODUCTION

Purpose of the Study

In its educational progress a state is helped by a comparison of the features of its school system with the same features in other states. Such comparisons serve to set in clear perspective likenesses and differences, and—since our state systems of education have been developed not only according to the experience of the individual state but also according to that of other states—the facts thus established may be used as one worthwhile basis for any needed reorganization of the features of the school system.

At present, one of the most important and also one of the most common features of the school systems of the several states is the office of chief state school official. This office is studied herewith. In brief, the study seeks to show both what are and what ought to be the conditions pertaining to the office just named, and particularly, it seeks to present these conditions as reflected by the current legislation on the office.

Nature of the Study

With the problem thus stated it can be seen that the attack upon it cannot be confined to

(*Sample page showing a footnote citation.* See next page also).

Formative Influences for the First Office

What were the influences which brought forth the first provision for the office, namely, that of New York? In discussing this question the first thing to note is that in the early educational organization of the State of New York a dual system of school administration was the characteristic feature. The University, with its board of regents, had jurisdiction over colleges and academies, and was one part of the administrative machinery. The office of superintendent of common schools, which had jurisdiction over the common schools, was the other part of the dual system. The establishment of the University preceded the creation of the office of superintendent of common schools, and, as will be shown directly, it was the agitation of the University and its regents which was instrumental in getting provision made for the office of superintendent of common schools.

The University was not, however, in the commonly accepted sense, a university at all, but rather a state board of education with control over colleges and academies, the whole being governed by a body of regents. It was incorporated in 1784.[1]

---

[1] Sidney Sherwood, *University of the State of New York, Origin, History and Present Organization,* pp. 223-228. See also *Laws of New York, 1784,* Ch. 51.

(*Sample page showing footnote citations.* See preceding page also).

Under the same act Kings College was revived and was given the name of Columbia College. This act was primarily for the benefit of the college and secondarily only for the benefit of the state. It had served the purpose, however, of giving form, even though imperfectly, to the idea of state control in education.

In 1787[1] the law of 1784 was revised, giving the board of regents definite powers over the colleges and academies of the state. The University was henceforth to overshadow Columbia College and the system was truly to become a state system coextensive with the political organization of the state; furthermore, it was to be used for the good of the state as a whole.

The University regents suggested the establishment of a system of common schools in their reports of 1793[2] and 1794[3] but nothing was done by the legislature. In 1795, again, they stated that they had the supervision of two colleges and twelve academies, and these, "with the establishment of schools for common branches of education, were the legislature pleased to grant it, must soon have the most beneficial effects on the state of society."[4]

---

[1] Sidney Sherwood, *op. cit.*, pp. 228-272.

[2] *New York Assembly Journal, 1793,* p. 211.

[3] *Ibid., 1794,* p. 32.

[4] *Ibid., 1795,* p. 86.

(*Sample page showing citations in the body of the page*).

How are we to account for the long delay in establishing an office which today is considered so necessary that it is found in every state? Clearly the delay was not due to lack of interest in education for this interest was early evidenced by the building of many academies and private and church schools; moreover, many communities everywhere, of their own initiative, had established public schools even before the state had enacted laws requiring them to do so. (6, Jernegan, pp. 361-380).

At least two retarding influences to the establishment of the office stand out. First, the prevalent theory of individual and community rights met with popular approval. Second, the idea of the association of the church and the school was hard to eradicate from the minds of the people. (4, Brown, p. 6). These influences made for decentralization in school organization down to almost the middle of the nineteenth century. (4, Brown, pp. 6-7). In addition to these influences it should be noted also that no model for the office existed in any form. Even county and city superintendents were unknown until many years after the establishment of the office of chief state school official. (5, Cubberley, p. 37 and p. 58). The office of United States Commissioner of Education could not serve as a model for it was not created until 1867. The office must wait, therefore, until unmistakable needs should bring it into being.

(*Sample statistical table containing original data*).

TABLE I. SALARIES OF THE CHIEF STATE SCHOOL OFFICIALS IN 1896, 1909, AND 1923

State	Salary in 1896	Salary in 1909	Salary in 1923	Percentage increase since 1909
Alabama........	$2,200	$3,000	$5,000	66.6
Arizona.........	1,200	2,000	3,300	65.0
Arkansas........	1,600	2,500	2,500	0.0
California.......	3,000	3,000	5,000	66.6
Colorado........	3,000	3,000	3,000	0.0
Connecticut.....	(no data)	3,500	9,000	157.1
Delaware.......	(no office)	(no office)	5,000	....
Florida.........	1,500	2,500	3,600	44.0
Georgia.........	2,000	2,000	4,500	125.0
Idaho..........	1,500	2,400	2,400	0.0
Illinois..........	3,500	7,500	7,500	0.0
Indiana.........	2,500	3,000	5,000	66.6
Iowa...........	2,200	2,200	4,000	81.8
Kansas.........	2,000	2,500	3,000	20.0
Kentucky........	2,500	2,500	4,000	60.0
Louisiana.......	3,000	2,000	5,000	150.0
Maine..........	1,500	2,500	4,600	84.0
Maryland.......	(no office)	3,000	8,000	166.6
Massachusetts...	4,500	4,500	9,000	100.0
Michigan.......	1,000	2,000	5,000	150.0
Minnesota......	2,500	3,000	5,000	66.6
Mississippi......	2,000	2,500	4,500	80.0
Missouri........	3,000	3,000	3,000	0.0
Montana........	2,500	3,000	3,600	16.6
Nebraska.......	2,000	2,000	5,000	150.0
Nevada.........	2,000	2,000	3,600	80.0
New Hampshire .	2,500	2,500	4,500	80.0
New Jersey.....	3,000	5,000	10,000	100.0
New Mexico.....	2,000	2,400	3,000	25.0
New York.......	5,000	7,500	12,000	60.0
North Carolina..	1,500	3,000	4,000	33.3
North Dakota...	2,000	2,000	3,000	50.0
Ohio...........	2,000	2,000	6,500	225.0
Oklahoma.......	1,200	2,500	2,500	0.0
Oregon.........	1,800	3,000	4,000	33.3
Pennsylvania....	4,000	5,000	12,000	140.0
Rhode Island....	3,000	4,000	6,000	50.0
South Carolina ..	1,900	1,900	2,500	31.6
South Dakota...	2,500	1,800	1,800	0.0
Tennessee.......	2,000	2,500	3,600	44.0
Texas..........	2,500	2,500	4,000	60.0
Utah...........	1,500	2,400	4,000	66.6
Vermont........	2,000	2,000	6,000	200.0
Virginia.........	2,000	3,500	3,500	0.0
Washington.....	2,500	3,000	3,000	0.0
West Virginia...	1,500	3,000	5,000	66.6
Wisconsin.......	1,200	5,000	5,000	0.0
Wyoming.......	2,000	2,000	3,000	50.0
Median.........	$2,303	$2,739	$4,250	55.2
Arithmetic mean	2,273	2,970	4,834	62.8
Range..........	1,000–5,000	1,800–7,500	1,800–12,000	0.0–225

(*Sample page showing a distribution and summary table, also how footnotes to tables should be written, etc.*).

Although the salaries of the chief state school officials are increasing rapidly, they are still small compared with what they should be. It is a sad commentary that two states (South Dakota and Wyoming) pay at present (1923) less than $2,500 annually while eighteen states pay less than $4,000 annually. The distribution of the salaries for 1923 may be seen more clearly from Table II.

TABLE II. DISTRIBUTION OF THE SALARIES OF THE CHIEF STATE SCHOOL OFFICIALS, 1923[a]

Salary groups	Number of states in each group
$1,800–$2,499	2
2,500– 3,199	10
3,200– 3,899	6
3,900– 4,599	9
4,600– 5,299	11
5,300– 5,999	0
6,000– 6,699	3
6,700– 7,399	0
7,400– 8,999	2
8,100– 8,799	0
8,800– 9,499	2
9,500–10,199	1
10,200–12,000	2
Total	48
Median	$4,250
Arithmetic mean	4,834
Range	1,800–12,000

---

[a] For Idaho and Wyoming, which have two chief state school officials, the salaries of only the superintendents of public instruction are included in the tabulations.

The salary everywhere should be made compatible with the large functions and important responsibilities of the office.

(*Sample statistical table*).

TABLE III. THE DISTRIBUTION OF MARKS OF EACH GROUP IN ENGLISH IN GRADES 9 TO 12 INCLUSIVE

Class intervals	Grades				Total
	9	10	11	12	
	Junior high school group				
95–100............	23	19	15	12	69
90– 94.99.........	40	24	23	20	107
85– 89.99.........	62	53	53	45	213
80– 84.99.........	52	71	78	70	271
75– 79.99.........	23	13	18	12	66
70– 74.99.........	1	5	9	7	22
65– 69.99.........		9	2	1	12
60– 64.99.........		1			1
	Non-junior high school group				
95–100............	19	19	19	16	73
90– 94.99.........	32	22	13	10	77
85- 89.99.........	67	44	47	40	198
80– 84.99.........	59	83	84	70	296
75– 79.99.........	16	18	19	10	63
70– 74.99.........	6	5	8	3	22
65– 69.99.........	2	5	8	4	19
60– 64.99.........					

The table shows that there is not much difference between the marks of the junior high school group and the non-junior high school group. The comparison seems to prove nothing about the relative efficiency of the two types of school organization; more data are still needed for that.

(*Sample circular or pie chart*). Note that an attempt is made in the next few pages to illustrate some of the more common types of charts and graphs in use at present. If other samples are needed, the books cited on page 132 of this manual will be found helpful in supplying them.

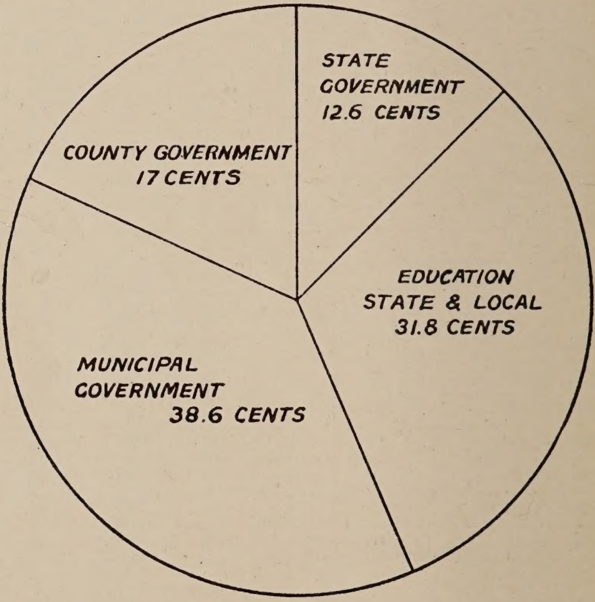

FIG. I.—HOW THE NEW JERSEY TAX DOLLAR WAS SPENT IN 1923.

(*Sample line chart*). Note that in charts that have more than one curve the curves may be identified either by using a key or by lettering the information on the curves).

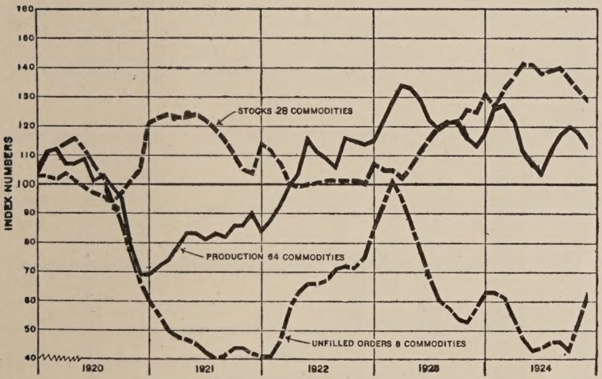

FIG. 2.—RELATIVE PRODUCTION, STOCKS, AND UNFILLED ORDERS FOR MANUFACTURED COMMODITIES, 1920-1924[a].

(From *Survey of Current Business,* p. 10. Bulletin of the United States Department of Commerce, Feb., 1925, No. 42).

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[a] The 1920 monthly average = 100.

(*Sample line chart*).

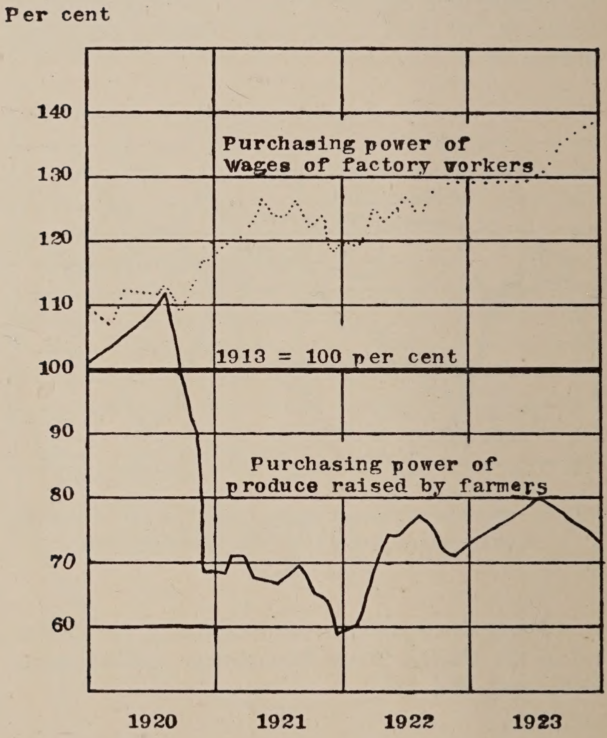

FIG. 3.—COMPARATIVE PURCHASING POWER OF FARM AND FACTORY EARNINGS FROM 1920 TO 1923.

(*Sample bar chart*).

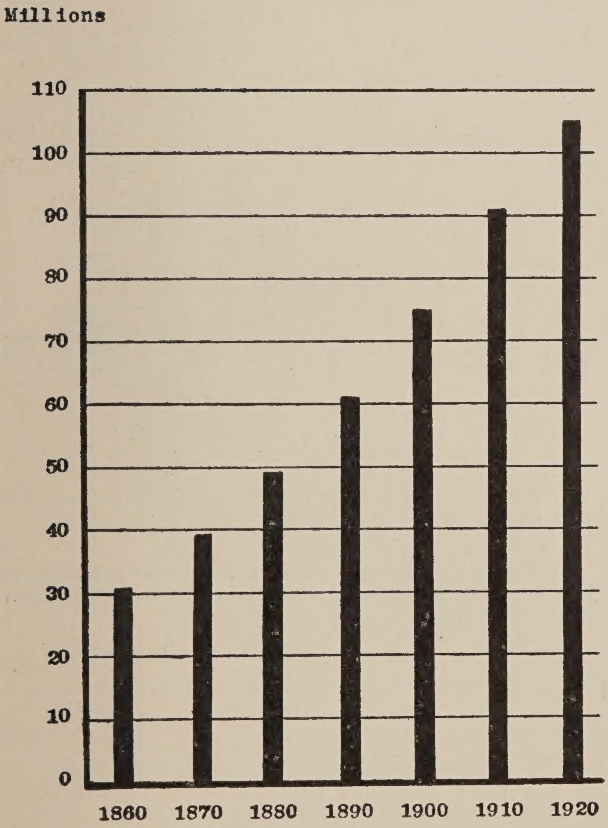

FIG. 4.—POPULATION OF THE UNITED STATES FOR EACH DECADE FROM 1860 TO 1920.

(*Sample bar chart*).

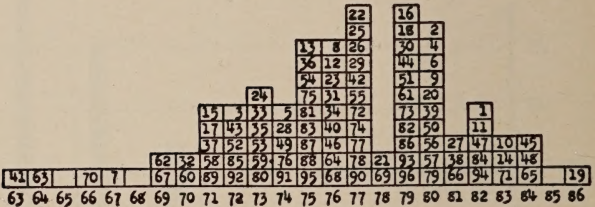

FIG. 5.—AVERAGE SCORES MADE IN SPELLING BY 96 ELEMENTARY SCHOOLS[a].

(From C. H. Judd, *Measuring the Work of the Public Schools*, p. 84).

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[a] The figures below the chart show the percentages and the ones in the squares of the chart show the numbers of the schools.

(*Sample bar chart*).

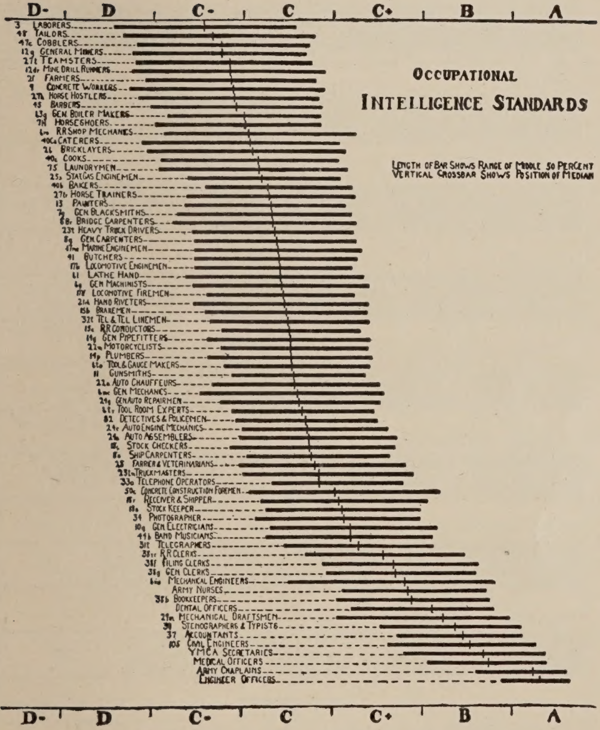


FIG. 6.—INTELLIGENCE STANDARDS OF MEN IN THE UNITED STATES ARMY DURING THE WORLD WAR[a].

---

[a] Bar shows range of middle 50 per cent. Vertical crossbar shows median. The chart is based on the data from 36,500 men. The numbers at the extreme left of the chart are occupational key numbers.

(Sample bar chart).

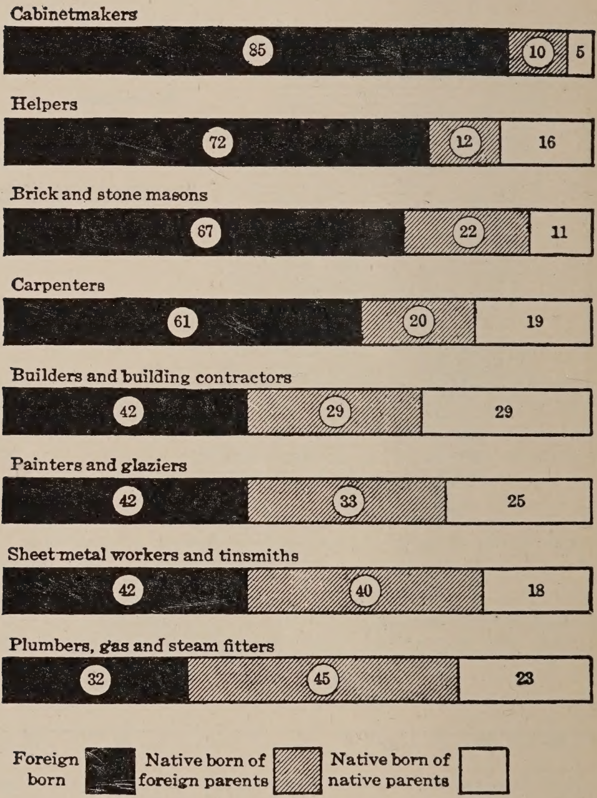


FIG. 7.—PERCENTAGE OF WORKERS IN BUILDING TRADES THAT ARE FOREIGN-BORN, NATIVE-BORN OF FOREIGN PARENTS, AND NATIVE-BORN OF NATIVE PARENTS.

(From F. L. Shaw, *The Building Trades*, p. 33).

(*Sample organization chart.*) The organization chart is frequently used to show the relation of one official or department to other officials or departments in an organization.

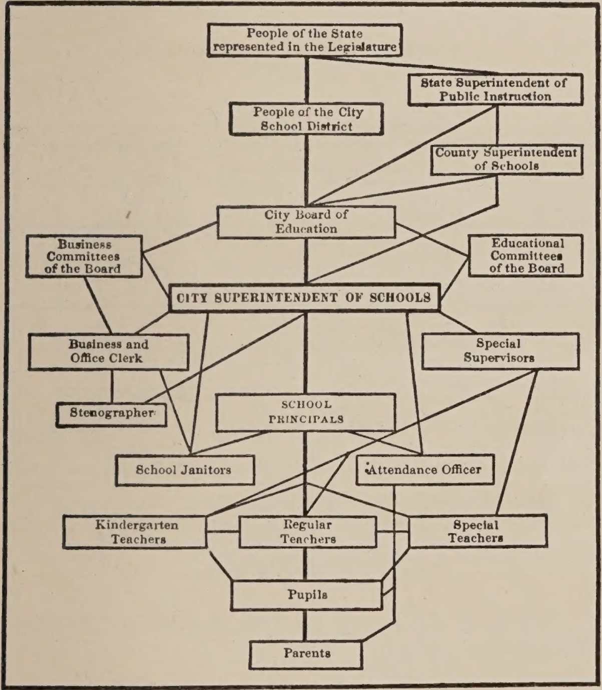

People of the State represented in the Legislature
State Superintendent of Public Instruction
People of the City School District
County Superintendent of Schools
City Board of Education
Business Committees of the Board
Educational Committees of the Board
CITY SUPERINTENDENT OF SCHOOLS
Business and Office Clerk
Special Supervisors
Stenographer
SCHOOL PRINCIPALS
School Janitors
Attendance Officer
Kindergarten Teachers
Regular Teachers
Special Teachers
Pupils
Parents

FIG. 8.—PLAN OF EDUCATIONAL ORGANIZATION FOR A SMALL CITY SCHOOL SYSTEM.

(From E. P. Cubberley, *Public School Administration,* p. 167).

(*Sample correlation chart*).

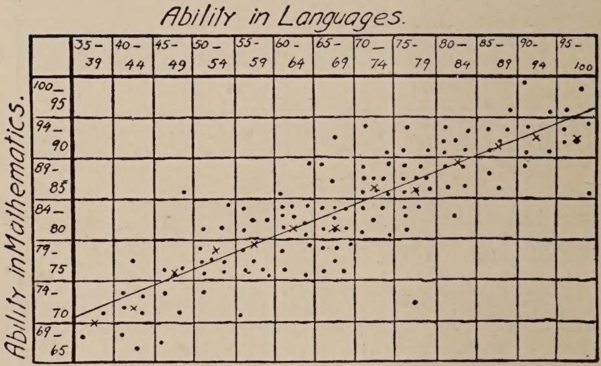
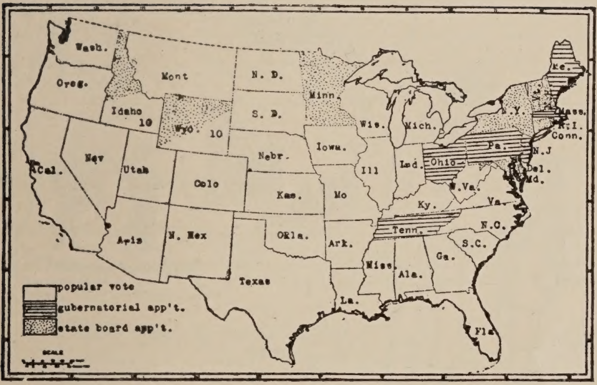


FIG. 9.—DISTRIBUTION OF CORRELATED ABILITIES IN LANGUAGES AND MATHEMATICS FOR 130 COLLEGE STUDENTS.

(From H. O. Rugg, *Statistical Methods Applied to Education,* p. 241).

(Sample map chart).


Wash.
Oreg.
Idaho
10
Mont
N. D.
S. D.
Wyo.
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Minn.
Wis.
Mich.
N.Y.
Me.
Mass.
R.I.
Conn.
Cal.
Nev
Utah
Colo
Nebr.
Iowa.
Ill
Ind.
Ohio
Pa.
N.J
Del.
Md.
W.Va.
Va.
Kas.
Mo
Ky.
Tenn.
N.C.
S.C.
Ariz
N. Mex
Okla.
Ark.
Ga.
Miss
Ala.
Texas
La.
Fla
popular vote
gubernatorial app't.
state board app't.
SCALE

FIG. 10.—SECTIONAL PREFERENCES FOR THE VARIOUS METHODS OF SELECTING THE CHIEF STATE SCHOOL OFFICIALS, 1923.

(*Sample picture chart*).

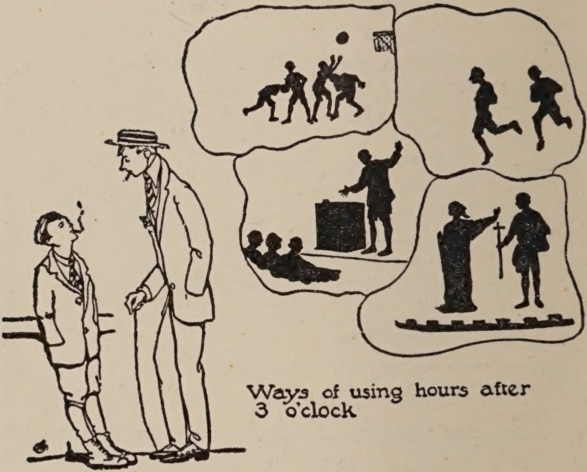
Ways of using hours after
3 o'clock

FIG. II.—ILLUSTRATING THE IMPORTANCE OF AFTER-SCHOOL ACTIVITIES.

(*Sample questionnaire*).

TREASURY DEPARTMENT
U. S. PUBLIC HEALTH SERVICE
Form 9408 B

UNITED STATES PUBLIC HEALTH SERVICE

Epidemiological Study of Common Colds and Other Minor Respiratory Affections

CLINICAL REPORT FOR THE PERIOD FROM ....April 1 **TO** ....15, 1925.

1. During the above-mentioned period have you suffered from an attack of any of the ailments mentioned below? yes ☐ no ☐

2. If so, please indicate by check (X) in proper spaces below the *nature* of such attack:

Nature of Attacks Reported (Check)	Was this attack reported in preceding report?		Date of Onset	Are you now well?		If well, give date of recovery
	Yes	No		Yes	No	
☐ Cold (includes "cold in head" or "nose cold")						
☐ Bronchitis (includes cold in chest with cough)						
☐ Influenza (includes "grippe" or "flu")						
☐ Tonsillitis or pharyngitis (sore throat)						
☐ Hay fever ("pollen fever" or "rose cold")						
☐ Pneumonia (only if so diagnosed by physician)						

3. Did this attack keep you from work during this period? yes ☐ no ☐ No. of days in this period ....
4. Did this attack keep you in bed during this period? ☐ ☐ No. of days in this period ....
5. Did you have the attention of a physician for this attack? ☐ ☐
6. Please indicate by checks (X) in proper spaces below the *symptoms* of the attack reported above (except in case of pneumonia):

yes no		yes no		yes no
(1) ☐ ☐ Sudden onset	(6)	☐ ☐ Running of nose	(11)	☐ ☐ Expectoration
(2) ☐ ☐ Chill or chilliness	(7)	☐ ☐ Aching in body or limbs	(12)	☐ ☐ Sore throat
(3) ☐ ☐ Headache	(8)	☐ ☐ Obstruction of nostrils	(13)	☐ ☐ Constipation
(4) ☐ ☐ Fever	(9)	☐ ☐ Tightness of chest	(14)	☐ ☐ Other symptoms
(5) ☐ ☐ Inflammation of eyes	(10)	☐ ☐ Cough	(State)	....

7. Are you aware of any *special circumstances*, such as exposure to draft, chilling, wetting, overheating, or fatigue, which seem to you wholly or partly responsible for the onset of your attack? yes ☐ no ☐
8. If "yes," please give brief statement of circumstances, with dates: ....

....

....

9. Have you any definite knowledge of having been in contact with any similar case within one to five days prior to the onset of your attack? yes ☐ no ☐
10. If "yes," please give brief account of the exposure, with details as to intimacy and dates of contact:

....

....

11. In case you have reported an attack of "influenza," "flu" or "grippe," in this period, in what respect did it differ from an ordinary "cold?" ....

....

....

Dated ...., 192 Signed ....

Please indicate any *change* of address here ....

INFORMATION FURNISHED UPON THIS RECORD WILL BE CONSIDERED CONFIDENTIAL, TO BE USED BY THE PUBLIC HEALTH SERVICE ONLY FOR STATISTICAL PURPOSES.

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The bibliography here presented is not complete, but selected. In selecting the references to be included the author has been required to make several arbitrary decisions, and undoubtedly he has omitted several references as good as those here included.

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An excellent guide for research students in educational administration; the bibliographies are unusually valuable.

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A work which has greatly influenced historical method all over the world.

Beveridge, Albert J. "The Making of a Book." *The Saturday Evening Post,* October 23, 1926, pp. 14-15, 182, 185-186.

An unusually interesting article by a great writer.

---

[1] If citations were made in the body of the page as described on page 110 of this book, it would be necessary, of course, to number the references in the bibliography.

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A helpful elementary handbook for the writer's desk.

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A valuable handbook for the writer to have on his desk.

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Mudge, Isadore Gilbert. *Guide to Reference Books.* 5th ed. Chicago: American Library Association, 1929. xii + 370 pp.

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Ogg, Frederick Austin. *Research in the Humanistic and Social Sciences: Report of a Survey Conducted for the American Council of Learned Societies.* New York: The Century Company, 1928. viii + 454 pp.

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